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Discrimination and insurance

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Discrimination and insurance

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Abstract

Is it fair and just to charge men and women identical life insurance premiums despite their different actuarial risk? What about charging the old and the young different premiums? As entities whose core business is to classify people based on their actuarial risk, should private insurance companies not be allowed to discriminate between various groups? To answer these and various other questions, I start this chapter by revealing the complete confusion that exists in the legal terrain with respect to antidiscrimination norms in insurance. I then show how philosophers writing about discrimination mostly have been writing at a level of abstraction so high that it comfortably ignores relevant nuances, thus making the entire literature largely useless for any insurance-related policy-making purposes. I conclude by proposing a theoretical framework that can help policy makers apply a fair and just anti-discrimination policy.

Introduction.

Private insurance is everywhere. As the primary device to reduce risk of loss and uncertainty, insurance is one of the most important institutions around us. It provides financial support in business and human life, it encourages safety and saving behaviors, and it provides security from catastrophic losses as well as peace of mind when aging. Insurance even promotes economic growth and international trade. And yet, very little is known about the requirements of justice and specifically of equality and fair non-discrimination norms from private insurance providers. As entities that offer services to the public, are they subject to the same norms as public entities? As entities whose core business is to classify people based on their actuarial risk, are they not allowed to discriminate between various groups?

Indeed, what is unique about insurance is that even statistical discrimination (the act by which an insurer uses a characteristic of an insured or potential insured as a statistic for the risk it poses to an insurer), which by definition is absent any malicious intentions, poses significant moral and legal challenges. Why? Because on the one hand, policy makers would like insurers to treat their insureds equally, without discriminating based on race, gender, age, or other characteristics, even if it makes statistical sense to discriminate. Indeed, the US Supreme Court has expressed this aim of policy makers regarding insurance: "[e]ven a true generalization about [a] class cannot justify class-based treatment" (*Norris 1983*). On the other hand, at the *core* of insurance business lies discrimination between risky and non-risky insureds. But riskiness often statistically correlates with the same characteristics policy makers would like to prohibit insurers from taking into account. In fact, historically, courts in the EU and the US have permitted insurers to account for these characteristics; some because such a practice is required to maintain healthy insurance

markets, and others because in their view the practice (in the absence of malicious intentions) is a *manifestation* of the equality principle. As one American court wrote: "[r]isk discrimination is not race discrimination" (*Nat'l Assoc. For The Advancement Of Colored People, 1992*).

The picture is further complicated by the fact that insurance is both a social and a private enterprise. While social, government-provided insurance reflects ideals of solidarity and cross-subsidization of risk among the citizens, private insurance is profit-driven, thus requiring different risk pricing. But even private insurance requires a license from the state and states often require their citizens to purchase various types of insurance. The protection from competition and the guaranteed demand for their products can justify imposing antidiscrimination norms on private actors. Indeed, states have struggled to find a middle ground between complete prohibition and complete permission, by prohibiting risk differentiation if it amounts to "unfair discrimination." The problem, however, remained because "unfair discrimination" remained undefined. Indeed, states' constitutions and the main human rights documents only provide a list of prohibited grounds for discrimination, without ever defining discrimination.

The goal of this chapter is to try to reimagine private insurance as an institution complying with the fundamental requirements of justice, and specifically with fairness and non-discrimination norms. My first goal is to highlight the unique features required for the understanding of the seeming oxymoron *fair* discrimination in insurance. My second goal is to introduce a nuanced way to understand how costs matter in the determination of whether insurance discrimination is overall *just*. (I use the word "fair" for the deontological, cost-blind requirement to not discriminate, as

discrimination is prima facie wrong, and the word "just" for the consequentialist, costs-conscious requirement to not wrongfully discriminate, all things -including costs - considered.)

Given the scope here, I do not attempt to develop an original and robust account of the wrongfulness of discrimination, which would capture all our intuitions and be resistant to all philosophical objections. Others have already brilliantly failed at this undertaking before. Instead, I draw on other philosophers' work on discrimination, most of which is not directly on insurance, in order to extract insights relevant to fair insurance practice. Then, because I believe that justice cannot be blind to costs, I also build on the literature on the social costs of prohibition on discrimination in insurance markets in my attempt to draw a skeleton for a theoretical framework for a just discrimination in insurance. Ultimately, I argue that there is no one-size-fits-all answer to the questions of what a fair and just insurance policy is. Rather, the answer varies from one line of insurance to another and from one characteristic to another, as well as from one type of discriminatory treatment to another. To illustrate this point, consider the following two examples:

Example 1: In a landmark case in 2011, the European Court of Justice entirely forbade charging women *less* than men for their life insurance, even though on average, women live longer than men and therefore are less likely to die in any given year (*Test-Achats 2011*). By contrast, this practice is not entirely forbidden in many US states.

<u>Example 2</u>: In a couple of landmark cases in late 1970s and early 1980s, the US Supreme Court entirely forbade charging women *more* than men for their employer-provided pension insurance funds or providing them with smaller monthly benefits, even though on average, women live longer than men and therefore require pension benefits for a longer period of time (*Manhart 1978, Norris 1983*). By contrast, this practice is not entirely forbidden in the EU.

Which approach does equality support? What can and should explain the differences between the EU and US? Besides the cross-continental difference, an internal inconsistency exists as well. Life insurance provides coverage for dying too early, whereas pension insurance provides coverage for dying too early, whereas pension insurance provides coverage for dying too late, so to speak. It seems that norms of antidiscrimination should have the same impact in both types of insurance; yet each legal system reverses its own treatment of gender discrimination between pension insurance and life insurance.

The puzzle is not limited to any one line of insurance or insurer characteristic; rather, it pervades the entire institution. It might be obvious that people should not be denied insurance or charged a higher premium because of their race, but what about people who are overweight (cf. chapters 16 and 22)? Is this class protected? And even if it is protected, is it protected no matter what the costs to the rest of the pool or society are?

The Existing Approach for Statistical Discrimination by Insurers

With some notable exceptions, in most of the cases both the EU and the US require insurers to balance equality and efficient business practices by refraining from "unfair discrimination." However, how they should strike that balance remains a normative mystery. Below, I scan the legal landscape in both the EU and the US. My goal is to expose in more detail the inconsistency already revealed in the examples above. It remains an open question whether this inconsistency reflects substantive disagreements about moral first principles, about the proper implementation of (otherwise consensual) first principles, or about second-order considerations such as market conditions or path dependency. This question can only be answered once philosophers provide a robust theoretical framework for unfair discrimination in insurance and economists provide evidence about the social cost of the prohibition on unfair discrimination.

The EU Legal Landscape

Article 5(1) of Council Directive 2004/113/EC of 13 December 2004 implemented the principle of equal treatment between men and women in the access to and supply of goods and services.¹ It provides that "the use of sex as an actuarial factor in the calculation of premiums and benefits must not result in differences in individuals' premiums and benefits." Article 5(2), however, allowed deviation from the prohibition if the use of sex is "based on relevant and accurate actuarial and statistical data." In the above mentioned landmark case (the 2011 *Test-Achats* ruling), the Court of Justice of the European Union declared article 5(2) invalid, meaning that gender can no longer be taken into account, even if makes actuarial sense.

Despite its seeming applicability to all lines of insurance, the *Test-Achats* ruling did not create a reliable bright line. As the European Commission has subsequently clarified, it remains possible for insurers to offer gender-specific insurance products to cover gender-specific conditions such as prostate cancer or breast cancer.² On the other hand, and to further complicate matters, this option is prohibited when it comes to pregnancy and maternity, in light of the specific solidarity mechanism created by Article 5(3). But that is not all. The line continues to blur because the use of risk factors that might be correlated with gender remains permissible as long as they comprise real risk factors in their own right. For example, in the field of auto insurance, price differentiation

based on the size of a car engine is acceptable, even if statistically, men drive cars with engines that are more powerful. In other words, while direct statistical discrimination was prohibited, indirect statistical discrimination was not (cf. chapters 1 and 2).

Certain other inconsistencies remain in the wake of the *Test-Achats* ruling. For example, Article 9[1][h] of Directive 2006/54/EC, which applies to pension plans, allows for the setting of different levels of benefits between males and females when justified by actuarial factors. One would expect that because pension and life insurance cover similar risk (the risk of not knowing when one would die) the *Test-Achats* ruling will apply to pension plans as well. And yet, according to the European Commission, *Test-Achats* has no impact on this provision. Lastly, the European Commission also explained that the *Test-Achats* ruling does not affect the use of other in many ways similar risk-rating factors, such as age or disability.

The US Legal Landscape

In the US, the situation is somewhat different, though equally inconsistent. To date, most states in the US have adopted some form of a baseline prohibition against "unfair discrimination between individuals of the same class and essentially the same hazard." Typically, this prohibition does not apply: "where the refusal, limitation, or rate differential is based on sound actuarial principles or is related to actual or reasonably anticipated experience." (See e.g. NY Code - Section 4224). What are those "sound actuarial principles" or "reasonably anticipated experience[s]" that justify discrimination? No one really knows. Indeed, a great deal of inconsistency exists in the treatment of anti-discrimination norms in the U.S. This inconsistency exists in federal laws and state laws,

across coverage lines andpolicyholder characteristics, and in both the substance and the intensity of regulation.

Inconsistent Treatment of Discrimination across States' Statutes. In the US, insurance law is primarily governed by the states, not the federal government. The variation of the specific laws governing discrimination practices exists not only across states, but also internally, across lines of insurance and policyholder characteristics. Whereas Montana flatly forbids gender discrimination, California requires it—comprising an example of *cross-state variation* (Avraham et al. 2014). State regulation of discrimination in the automobile and property lines of insurance is more robust than in the cases of health, life, or disability insurance—comprising *cross-line variations*. One particular example of cross-line variation is that many states prohibited insurers' use of genetic information in health insurance. However, states hardly regulate the use of such information matters. An example of a *cross-characteristics variation* is that before Obamacare, insurers were allowed to use gender in health insurance underwriting decisions, but were not allowed to use race for the same purpose. The *cross-state, cross-line, and cross-characteristics* variations of states' specific laws remain normatively unexplained (but see Avraham et al. 2015).

Inconsistent Treatment of Discrimination by Courts. The inconsistent treatment of discrimination by states' legislatures is further reflected in courts' interpretation of the statutory term, "unfair discrimination." In the context of auto insurance, for example, courts found that automobile insurance rates based upon sex and age are fair unless those sex-and-age-based rating factors are found to be actuarially unsound.³ Yet, other courts have forbidden auto insurers from

discriminating based on age, sex, or zip code.⁴ A similar dynamic exists with respect to race. Some courts permitted life insurers⁵ or homeowner insurers⁶ to charge African Americans higher premiums than Caucasians since the difference was based on statistical risk, while other courts prohibited such practices.

Inconsistent Treatment of Discrimination by Legal Commentators. The vast majority of legal and philosophy scholars writing on discrimination did not write about it in the context of insurance; the vast majority of scholars writing on insurance have not considered questions of discrimination. An important exception happened in the US around the years when the Supreme Court delivered the aforementioned cases of *Norris* and *Manhart* decisions, when a lively debate on the permissibility of gender discrimination in pension insurance emerged between lawyers and economists. Some scholars argue that actuarial fairness *is* fair (Gerber 1975; Kimball 1979; Benston 1982; Bailey et al. 1976) or can be *made* fair (Gaulding 1995; Wortham 1985). Other scholars consider "rational" discrimination to be repugnant (Sydlaske 1975; Laycock and Sullivan 1981; Brilmayer et al. 1984).

Interestingly, neither camp can justify the tremendous variation that exists in the law. For example, neither camp can explain why race discrimination is considered repugnant, while gender discrimination is so often deemed acceptable in the insurance context. Commentators on both sides of the debate have noted this inconsistency and have argued that the laws should be changed to eliminate it where one camp argues that both race and sex discrimination should be allowed because both race and sex are statistically correlated with risk, whereas the other camp, by contrast, argues that neither form of discrimination should be allowed because both race and sex are

categories over which individuals have no control or are historically invidious classifiers, or because using such classifications perpetuates undesirable stereotypes about race and gender—or some combination of these arguments.

With a few important exceptions (Wortham 1986; Gaulding 1985), commentary has focused on whether *particular* classifications should be forbidden from an antidiscrimination perspective. The commentary usually focuses on one or two insurance lines, such as life insurance and pensions (Brilmayer et al. 1984; Hoffman 2003). Developing a general normative framework, however, comprises a different challenge, requiring legal, economic, and philosophical foundations in order to determine the appropriate contours of discrimination in the entire universe of insurance. Such an undertaking also requires empirical investigation to account for the costs of implementing those norms in light of the market conditions. I now turn to highlighting the unique features of insurance that require philosophers to think deeper about what unfair discrimination is in the insurance context.

Unique Features of a Theoretical Framework

For egalitarians, "fair" practices means "just" or "equal" practices, meaning that insurers should drop from their analysis and calculations any characteristics whose use is normatively repugnant, such as race or gender. For actuaries and economists, "fair" practices means "actuarially fair," which also means "efficient." Accordingly, each insured pays a premium that reflects his or her risk. Risk is proxied by any classifier that substantially correlates with risk, including race and gender, even when the particular classification characterizes socially salient groups that might deserve constitutional protection. Proponents of this approach thus believe that the use of such proxies surmounts to rational actuarial discrimination; namely, permissible discrimination founded in business necessity (cf. chapter 3). So how should we reconcile the competing anti-discrimination norms and fundamental insurance practices?

Philosophers seem to agree that any conception of unfair discrimination must include some disadvantageous (and not merely differential) treatment of people based on their perceived membership in a socially salient group. However, philosophers disagree on what such discrimination exactly means and what makes it unfair. In recent insurance practices the issue is complicated further as insurers usually no longer intentionally attempt to disadvantage insureds for belonging to a certain group (the so-called disparate *treatment*), but rather evaluate in good faith insureds' individual risk based on the readily available statistical data for that group (for the so-called disparate *impact*). In short, discrimination in insurance no longer deals with the problem of intentional discrimination, but rather with the problem of *statistical* discrimination. Moreover, even the limited discussion of statistical discrimination that exists deals with direct statistical discrimination and almost completely ignores the hard problem of indirect statistical discrimination, such as when insurers discriminate based on a characteristic (such as the size of the car engine) that correlates with a protected class (such as gender).

Moreau's view is that discrimination is wrong because it violates our deliberative freedoms, which are our "freedoms to have our decisions about how to live insulated from the effects of normatively extraneous features of us, such as our skin color or gender" (Moreau 2010 pp147; chapter 13). It is unclear, however, whether Moreau would consider actuary risks, such as different mortality risks men and women face, as normatively extraneous features. Another view is that discrimination

is wrong when it treats people disadvantageously based on immutable traits (Kahlenberg 1996; cf. chapter 18). Sometimes, however, protection from discrimination is given even to mutable traits such as religion, while in other instances protection from discrimination is not given to immutable traits, such as denying blind people car insurance (Boxill 1992). Dworkin has argued that discriminatory acts are those that could be justified only if a certain prejudiced belief were correct. The absence of a "prejudice-free justification" thus makes a law or policy discriminatory (Dworkin 1985). Suppose, however, that there are bad ways of treating women that are unjustifiable no matter which prejudiced beliefs may be true, such as preventing women from undertaking physical jobs because on average they are shorter than men. Surely, treating women in that way while treating men much better could be discriminatory even though the stereotype might be correct. Indeed, Fred Schauer has argued that discrimination is wrong even when it relies on somewhat accurate stereotypes, which may apply to many but not all members of the group (Schauer 2003). A related view is that discrimination is wrong because it fails to treat people based on their individual merit (Hook 1995). The problem with this approach, however, is that it cannot explain what is distinctively wrong about failing to treat people based on merit (Cavanagh 2002). Does any disrespectful treatment of members of disadvantaged group constitute discrimination?

Hellman holds that direct discrimination is wrong because it demeans those against whom it is directed, treating them as morally inferior rather than morally equal (Hellman 2008; chapter 7). A related view argues that people are entitled to as much respect or concern as the dominant group not merely from the state but also in their daily relationships with other individuals or corporations (cf. chapters 6 and 35). To be in a "just relationship" with others, participants must interact with each other in a way that respects the individuality of each (Dagan and Dorfman 2015). Of course,

what counts as *demeaning* and what the idea of "just relationship" requires in the context of insurance remains to be worked out. Is charging women a lower life insurance premium demeaning? What about charging a higher pension contribution? Lippert-Rasmussen disagrees with the broad school of thought under which Hellman's approach falls, which he calls "[t]he disrespect-based account of the badness of discrimination" (Lippert-Rasmussen 2013). Lippert-Rasmussen argues that discrimination is wrong primarily because of its *harmful effects* (cf. chapter 12). But harmful compared to what? His view is that it should be harmful compared to the counterfactual situation whereby such discrimination does not exist. But what if prohibition on discrimination harms the disadvantaged group in the short run, yet advantages it in the long run? Scholars have argued that the EU's recent prohibition on gender discrimination in insurance raised premiums for both genders, allegedly making them both worse off. But what if such a prohibition would benefit women in the long run? Lippert-Rasmussen's approach seems to enable such a forward-looking costs and benefits analysis.

Obviously, in this chapter I cannot fully discuss all or even the few previously noted conceptions of discrimination. Still, my reading of the philosophical literature leaves me with the impression that very rarely does it apply neatly to insurance, where factors such as the relevant line of insurance, the characteristic, as well as the type of discrimination, are extremely important for the determination of what fair discrimination really is. For example, charging the elderly a higher premium for life insurance based on their higher actuarial risk is probably not as bad, if it is bad at all, as refusing to sell life insurance to old people, which in turn is probably also not as bad, if it is bad at all, as refusing to sell life insurance to black people even if their actuary risk is as high as that of the elderly. Nor is refusing to sell the elderly life insurance as bad as refusing

to sell the elderly health insurance. But most of the approaches noted above do not seem to advance the conceptualization much in these nuanced contexts.

Moreover, most of the previous conceptions do not place adequate emphasis on costs. But costs also matter. If forbidding discrimination will unravel an entire insurance market or kill hundreds of people a year because bad drivers no longer take caution on the roads because they are insured, policy makers need to pause before they require such insurance practices.

The Moral Requirements From a Theoretical Framework

To start filling in the gaps in the existing literature, in what follows I offer a two-stage process policy makers must undertake in order to determine what a *fair* and *just* insurance regime is. I provide a pragmatic sketch of how a more nuanced analysis can help determine whether a specific regime is *fair*. I then show how costs need to be integrated in order to determine whether a specific regime is also *just*.

At the first stage, policy makers must determine whether specific discrimination is *fair*; namely, that it is not prima fascia wrong. The answer to this deontological question depends on at least three factors: the characteristic in question, the line of insurance, and the nature of the discriminatory treatment. Once one concludes that some specific insurance practice is *fair* (or unfair), the second stage becomes relevant. In the second stage, one examines whether a specific discrimination (whether fair or unfair) is also *just*, as the social costs of allowing or prohibiting discrimination are taken into account. Such costs might come in three forms: First, a higher premium to the same group the prohibition on discrimination purported to protect; second,

potentially in the form of what economists call adverse selection, or third, even worse, in the form of adverse primary behavior. In other words, whereas the first stage examines the deontological fairness-related commitments private insurers have to their customers, the second stage engages in the tradeoff between equality and its consequences. I now describe these two stages in more detail.

Stage One: The Relevant Factors for Fair Discrimination

A. The First Factor: The Characteristics

Not all characteristics are the same. Both race and age are immutable, and yet in life insurance, we accept age discrimination but usually do not accept discrimination for race (cf. chapters 16 and 20). Indeed, the literature highlights several features that are relevant for the analysis, which is why the analysis is so complicated. First, we must determine whether a characteristic is controllable or immutable. There is some intuitive appeal to prohibiting discrimination that is based on immutable traits, as one should not be disadvantaged for things one has no control over. Indeed, people tend to tolerate discrimination more when choice is perceived to be involved, such as in the contexts of sexual orientation, obesity, and parenthood (Kricheli-Katz 2014). Of course, that does not mean that choice must be a factor, from a normative perspective. Indeed, as the previous example shows, not all immutable characteristics are treated the same. In fact, for discrimination to be wrong, mutability is probably neither a necessary condition (i.e., religion is mutable yet a protected trait) nor a sufficient condition (i.e., blind people are prevented from driving).

The second relevant feature for the analysis is whether the characteristic changes over one's lifetime (such as age) or stays fixed (Lipert-Rasmussen 2013). It is possible that age discrimination is more tolerable because we all get the same chance to be on the winning side and the losing side of it over the course of our lifetime. Third, we must determine whether a characteristic constitutes a *cause* of the risk, rather than merely *correlating* with it (Zarsky 200?). Legal commentators usually demand a causal relationship between the classifier and the risk for the classifier to be taken into account, whereas actuaries often believe that correlation is sufficient. Fourth, the characteristics' predictive value (of the underlying risk) must be considered; that is, to what extent is the characteristic a good predictor for the risk? The better predictor of risk the characteristic is, the more tolerable such discrimination becomes (cf. chapter 3). Fifth, we should determine whether discrimination on the basis of the characteristic perpetuates negative stereotypes, or otherwise subordinates disadvantaged groups (Hasnas 2002). Sixth, the historical use of the characteristic as a method of discrimination is relevant; that is, whether the characteristic defies a socially salient group that has been disadvantaged in the past. In that sense, discriminating based on skin color is more problematic than based on eye color. Whether a characteristic is socially suspect, of course, is context-dependent. For example, religion might be a more sensitive category in Catholic countries such as Italy, whereas race might be more sensitive in the US. In this context, it is interesting to reflect on the normative classification of 'new' socially-suspect classes such as the obese, HIV-positive individuals, or parents.

B. The Second Factor: The Line of Insurance

The importance of each insurance line varies. By importance, I refer to the importance of the insurance to the insured's autonomy and participation in the polity. For example, health insurance

is more determinative of citizens' ability to participate in the polity than are some other forms of insurance, such as traveler's insurance. When considering the disparate importance of these two lines of insurance to society at large, arguments for or against discrimination in the healthcare context have greater moral, economic, (and constitutional) implications than those in the context of traveler's insurance. While health insurance is more like a social good, or what Rawls called a "primary good," and many other will consider a basic human right, traveler's insurance is more like an economic commodity. If a good is an economic commodity, no moral duty necessarily exists to ensure equitable access. But where do life insurance or disability insurance, for example, fall on this spectrum? And what about homeowner's insurance, car insurance, or mortgage insurance?

C. The Third Factor: The Nature of the Discriminatory Treatment

Insurance companies might discriminate against insureds or potential insureds in various ways. I focus here on discrimination in the underwriting process, and not in the coverage decisions they make after an occurrence. The harshest type of discrimination is to never issue a policy because of some characteristic, such as a blanket refusal to insure blacks. A somewhat similar type of discrimination happens when insurers refuse to renew or when they cancel policies based on some characteristic. Indeed, many states have statutes that limit and others have statutes that prohibit the use of a particular characteristic in either issuance, renewal, or cancellation. Another form of discrimination involves restricting coverage in ways that might harm disadvantaged groups. For example, insurance companies might limit disability coverage to disabilities that do not stem from having HIV. But even with statutes limiting such discrimination, insurance companies can still discriminate against their insureds by simply charging a higher premium. Indeed, some states have

statutes that limit but do not completely prohibit the use of a particular characteristic in rate-setting. Other states have statues that expressly prohibit insurers from taking into account a specific characteristic, even in setting rates. These discrepancies call for a more nuanced fairness-based analysis of discrimination in insurance. For example, it is possible that fairness requires insurance companies to admit people with various diseases and disabilities to their pool, and yet fairness might still allow insurers to charge these people a higher premium.

The philosophical literature does not provide a nuanced analysis of the three factors described above as applied to insurance. Indeed, this literature rarely expressly relates to insurance at all, as rarely can its general insights directly be applied to insurance. Resultantly, and as we just saw, crucial legal nuances such as the nature of the insured's characteristics, the specific line of insurance, and the exact nature of discrimination remain unanalyzed. In what follows, I focus on another issue that the literature on discrimination overlooks: the role of costs in the analysis.

Stage Two: The Tradeoff between Equality and its Consequences

Whether discrimination is just overall, even when it is not fair, depends on the social costs involved. Therefore, policy makers should attempt to account for the actual cost related to discrimination. In this context, three types of costs must be considered. The first is the impact of the prohibition on discrimination on the disadvantaged group it purports to help. For example, imagine a prohibition on a comprehensive auto insurance policy providing *free* roadside assistance to women (but not to men). Such a prohibition can be justified in Stage 1 as fair on the ground that the policy demeans women (Hellman 2008; chapter 7) because it assumes they cannot or do not want to change a flat tire themselves, thus perpetuating a stereotype that women are physically

weaker, are deterred from physical tasks, or cannot handle a car—stereotypes that might hurt them in other markets such as the employment one. (Of course, a policy of free roadside assistance to women might be deemed fair in Stage 1 on the ground that society should be able to entertain the thought that women on average are less good than men at car maintenance and at the same time that women are morally equals to men. But let us assume for now that a Stage 1 analysis determined the policy to be unfair and therefore upheld the prohibition).

Such a prohibition, however, might increase the premium to women, potentially causing some of them—the poorer ones— not to buy comprehensive coverage, thus making them worse off. Oxera (2011) found that after the *Test Achats* case, which required insurance companies in the EU to have unisex premiums, life insurance premiums increased for women. Similarly, Aseervatham and colleagues (2014) found that following the *Test Achats* case auto insurance premium increased for young females. Is it self-evident that a policy that boosts fairness (Stage 1) but harms the very same group it purported to help is just? Does the magnitude of the harm to that group not matter?

Policy makers should also consider a second type of losses—efficiency losses in the insurance markets stemming from the fact that due to prohibition on discrimination, one group cross-subsidizes another, which might lead to a problem known to economists as adverse selection. If the insurer prices both races equally, all else being the same, blacks, for example, might pay less than the risk they pose. Insurers fear that certain whites cross-subsidizing blacks will drop out of the insurance pool. The absence of those less risky people will then raise the average riskiness of the pool, raising the cost of premiums for the entire pool and reducing the net benefit that participating in the insurance pool provides to the remaining members of both races. This situation

in and of itself is an efficiency loss. But that might not be all. The reduction in the net benefit might further lead to whites that were previously on the cusp of dropping their participation in the pool to reconsider, causing them to leave the pool as well. Insurers argue that these events happening repeatedly comprise a chain reaction they call a *death spiral*, which might not end until the entire insurance pool unravels. A similar phenomenon can occur if insurers are banned from using genetic information. People who know they have defective genes will opt into the pool, driving out people without such genes. The end result might be that in the name of equality for everyone, we provide insurance to no one.

Another possibility is that a prohibition on discrimination might lead insurers to conduct a more detailed investigation of each applicant, and that in turn will raise premiums for everyone, dropping the poorer would-be insureds outside of the pool. The outcome would be that equality between the races comes at the expense of the poor of both races. The bottom line is this: can one seriously argue that costs associated with adverse selection never matter for the normative analysis?

Notably, while higher adverse selection costs and costs associated with death spirals are theories well accepted by economists, the empirical evidence of the extent to which they accurately describe the real world is mixed. Cutler and Reber (1998) conducted a detailed analysis of health insurance plans. They show that when Harvard University increased the premium of the most generous health plans for its policyholders regardless of the risk they imposed, the best risks in the pool (the ones with lower medical expenses) left this plan for a less generous one with a lower premium. Other evidence for adverse selection in health insurance markets exist (Cutler

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and Zeckhauser (2000). However, in line with my claim in this chapter, in surveying the literature Cohen and Siegleman (2010) found that the significance of the adverse selection effect may vary by line of insurance, the characteristic discriminated against, and the nature of the discrimination. The upshot from all this is that in this regard as well, the analysis must be specific and cannot remain at the general level at which the literature in philosophy comfortably remains.

The third type of costs policy makers need to incorporate is the impact of allowing and prohibiting discrimination on insureds' *primary behavior*. Let us start with impact of *allowing* discrimination. Suppose we conclude in Stage one that discriminating on the basis of genetics is fair, for example because it is not conceptually different from discrimination based on health conditions, which was allowed in the U.S. until Obamacare. Our support of such discrimination may increase once we do our stage-two analysis and consider the risk of adverse selection discussed above. And yet, we must also consider the impact of such policy on insureds' primary behavior. In our case, if insurers were allowed to discriminate based on clients' genetics, people might be deterred from having genetic tests. This, in turn, might prevent them from getting preemptive help, as well as prevent society from improving the science of genetic diseases (Hellman 2003). These costs might justify prohibiting genetic discrimination, at least in lines of insurance where people might be deterred from taking the tests, despite such discrimination being fair and despite the costs associated with the risk of adverse selection.

A similar analysis can be conducted for the case when discrimination is *prohibited*. Let us assume that in the first stage, one concludes that credit score discrimination (which scholars believe to be

an alternative insurance companies found to race discrimination, once the latter was prohibited) should be prohibited in auto insurance. Still, policy makers should be hesitant to forbid credit score discrimination before they understand the empirical picture. In states that prohibit such discrimination in auto insurance, premiums may be lower for drivers with a low credit score. But if low credit score is correlated with substance abuse, such a policy might cause more risky drivers to drive, potentially decreasing overall safety. Is it not crucial to know whether car accident rates rise? What about the number of fatalities and severe injuries? Avraham, Cohen and Shurtz (2016) found that states that prohibited discrimination based on credit score faced an increase of about 3% in fatalities. This extrapolates to about one thousand fatalities a year nationwide. One must pause here and reflect on whether the prohibition on credit discrimination is at all just.

To be sure, it might still be the case that a prohibition on credit score discrimination is not only *fair* (stage one) but also *just*, even once the costs in terms of lost human lives are taken into account (stage two). My point, however, is that the impact on primary behavior involves important empirical questions that policy makers should not ignore.

More generally, I argued in this section that for pragmatic reasons a two-stage analysis is desirable. In the first stage, policy makers should focus on the deontological requirements a fair insurance regime necessitates. My main point there was that a more nuanced analysis, one that takes into account the specific characteristic, the specific line of insurance, and the specific nature of discrimination, is required. In the second stage, policy makers should focus on the costs associated with a fair anti-discrimination regime in order to determine whether it is also just. My main point there was again that a nuanced analysis is extremely important: one that takes into account the impact on the protected groups' welfare, the impact on insurance markets, and the impact on the primary behavior.

Conclusion

In this chapter, I sketched a contemporary mapping of antidiscrimination insurance laws (statutes, courts decisions, and directives) in both the EU and the US. Of course, inconsistency in legal treatment across and within jurisdictions is rampant in countless areas. Here, I conjectured that the complete legal mess might imply that policy makers still lack the necessary nuanced normative framework regarding optimal insurance anti-discrimination policy. I attempted to start filling in this gap with my two-stage analysis hereby offered.

One question left unanswered is why private insurance companies need to be subject to norms, such as anti-discrimination norm, usually applicable to the government. We never think about asking a grocery store to sell milk or bread to minorities below its costs, and yet we do ask insurance companies to do so when pricing policies. The answer might be that modern life makes insurance companies so large, in terms of their political, economic, and legal influence, that the same rationales originally applied to the relationship between citizens and governments are also relevant to citizens and insurance companies. Insurance companies sell services and spread risks across millions of people, thus serving a large chunk of the polity. Insurance companies are often protected from competition, especially from abroad, thanks to government regulation. Governments routinely mandate and encourage their citizens to buy coverage—a benefit no other private industry enjoys. Insurance companies manage trillions of our dollars, for example our pension funds, which comprise a large proportion of the public's wealth. Insurance companies are

often too big to fail, which grants them important influence with governments. And yet, it is not entirely clear that costs of equality should not be spread across all citizens rather than just the insurance company's customers. For example, if a minority neighborhood suffers from a high crime rate due to the government's neglect, which would naturally result in higher property insurance premiums in that neighborhood, it is not clear that insurance companies (and their customers) should bear the costs for such neglect by being prohibited from charging higher premiums in that neighborhood. Rather, perhaps a sounder regime will be one where the government reimburses insurers for the various costs associated with requiring them to charge an equal premium. This example highlights possible interesting intersections between markets, antidiscrimination norms, and mechanisms of distributive justice. However, adequately addressing these issues lies well beyond the scope of this chapter.

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¹ OJ L 373, 21.12.2004, p. 37.

² Guidelines on the application of Council Directive 2004/113/EC to insurance, in the light of the judgment of the Court of Justice of the European Union in Case C-236/09 (Test-Achats).

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⁵ Guidry v. Pellerin Life Ins. Co 364.F.Supp.2d 592 W.D.La.,2005. And see also Young v.

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REGULATION IN MICROINSURANCE MARKETS: PRINCIPLES, PRACTICE, AND DIRECTIONS FOR FUTURE DEVELOPMENT

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Regulation in Microinsurance Markets: Principles, Practice, and Directions for Future Development

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Abstract

Regulation of any market can either promote or impede its development, thus affecting social welfare. In this paper, we are concerned with the impact of regulation in microinsurance markets. We evaluate existing and potential regulatory mechanisms with regard to its underlying economic rationale, and offer recommendations intended to enhance support and minimize barriers for microinsurance market development. Specifically, we recommend avoiding incentives for regulatory arbitrage; responding to the characteristics of the microinsurance market, including licensing, capital, reinsurance, and distribution systems; enhancing the market through financial literacy initiatives; and providing support in the form of data collection and management training.

Keywords: Developing countries, microinsurance, regulation

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1 INTRODUCTION

The global microinsurance industry has grown tremendously over the past few years. The estimated number of policies sold more than tripled between 2009 and 2012, increasing from 135 million to 500 million (see ILO, 2012). Yet, estimates of the underserved market run as high as 4 billion¹ people at the "base of the pyramid" (see World Resources Institute, 2007). A variety of initiatives and organizations have been created to expand insurance penetration in low-income populations; and while these efforts have shown some success, there is still much room for improvement. Among the relevant areas to consider is regulation, which is viewed as having both positive and negative influences on the market. Some countries have passed specific regulation that applies solely to the microinsurance market, and others are considering this option. Furthermore, policymakers have raised the possibility of involving insurance regulators in the promotion of coverage for low-income populations, a role that could go beyond the traditional pricing, solvency, and market conduct functions. Examples include activities to assist insurers with data collection and employee training, as well as initiatives to improve financial literacy and risk management.

We seek to contribute to the discussion by (1) reviewing existing evidence of insurance regulation's successes and failures in conventional markets, (2) applying those lessons to the microinsurance environment, and (3) identifying situations when regulation may be able to improve microinsurance market conditions, as well as those where it may have deleterious effects. We also discuss several existing microinsurance regulatory schemes to illustrate the current practice.

A successful microinsurance regulatory scheme will promote market development and enhance social welfare. Based on this fundamental idea, we formulate specific recommendations as enumerated in Table 1 and presented in the following sections. Our intention is to support the successful design of future microinsurance regulations.²

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Recommendation	Examples
1. Reduce market	 Reconsider licensing requirements, particularly in light of innovative uses of
entry barriers	technology and partnerships for product distribution
	 Employ risk-based capital requirements
	• Define microinsurance in a way that minimizes incentives for regulatory arbitrage
	 Recognize the need for higher returns on lower-priced and often riskier products
2. Encourage market	 Provide and support comprehensive risk management educational initiatives,
demand	including insurance literacy
	 Encourage and make available effective risk mitigation strategies
	 Enhance underlying services, such as health care
	 Enforce regulations and demonstrate intolerance for corruption and fraud
3. Encourage market	 Offer data and management support
efficiency	 Provide training to agents, actuaries, underwriters, and insurance managers
	 Allow and encourage involvement of international reinsurers and alternative risk
	transfer mechanisms

 Table 1. Recommendations for Microinsurance Regulation

The remainder of this paper is structured as follows. In Section 2 we review the general rationale for insurance regulation, develop criteria for successful insurance regulation based on economic theory, and review the literature regarding microinsurance regulation. In Section 3 we present characteristics of the microinsurance market that have direct implications for regulation. Among these are product and market conditions distinct from the conventional market; the acute need for administrative efficiency because of the low premium value per policy; the need for improved financial literacy as well as underlying services covered by insurance; and the role of informal support mechanisms. We discuss and describe current specific microinsurance regulatory schemes in Section 4, and conclude in Section 5.

2 RATIONALE FOR INSURANCE REGULATION

(a) General

Insurance regulation has been with us nearly as long as has the formal insurance market, dating back at least to the 1575 establishment of the Office of Assurances in Great Britain to "coordinate and begin to control the writing of insurance" (Daykin & Cresswell, 2001). While regulatory efforts develop and change over time and across jurisdictions, regulation in the insurance sector generally falls into three categories: pricing, solvency, and market, the latter including product licensing and marketing, claims handling, market access,

and underwriting. As seems true for any regulated industry, debate over the appropriateness of governmental requirements is extensive and varied. Among economists, general agreement exists that the most socially beneficial industry regulations are those that assist in encouraging competitive markets. Such markets will not address issues associated with unequal wealth and income distribution or other societal concerns; yet the belief is that by encouraging competitive markets, private industry can perform its best for society. Other societal concerns can and should be addressed through non-private mechanisms, such as by NGOs and governmental programs, which are transparent and overt, limiting market distortions.

Within the insurance context, research suggests that the market demonstrates the key attributes of a competitive market, with many buyers and sellers, and reasonably open entry and exit; that is, concern over monopoly power is unwarranted. Joskow's (1973) seminal work set the foundation for such consideration within the insurance markets, and generally has been supported over the years (see Klein, 2012 for a discussion). Within the academic literature on insurance regulation, most authors conclude that regulation is most appropriate when market failures exist, and these most often are found in situations involving asymmetric information (see Klein, 2012).

Market failures in insurance tend to arise due to greater levels of information and power held by insurance carriers relative to consumers. These situations are most common in the personal-insurance lines of business, which is where microinsurance is focused. Insurers in particular have greater levels of information and power regarding the riskiness of their portfolio, leading regulators to focus on solvency concerns. Other concerns arise out of the insurer's control over contract wording and enforcement, which the consumer may not have the capability to understand or refute, directing attention to sales and claims adjusting practices.

Regulatory intervention is considered socially beneficial when the government holds superior capabilities to consumers in information acquisition and use. In the insurance sector,

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these capabilities tend to exist when individual private monitoring is ineffective and/or excessively costly in comparison with the economies of scale and enforcement powers held by regulators (see Cummins, 1988). Under such conditions, government intervention can enhance market competition and thereby increase social welfare (see Klein, 2012; Skipper & Klein, 2000).

Before continuing, it is important to differentiate between market conditions leading to actual market failure and conditions resulting in undesirable market outcomes. The former offer a rationale for government intervention; the latter do not. Lack of affordable insurance coverage due to high risk may be undesirable from a public policy perspective, but typically is not improved by governmental intervention.³ Other efforts to mitigate risks and/or enhance individual resources are expected to be more effective in addressing these sorts of undesirable market conditions than would insurance regulatory interventions.

In an effort to define effective schemes, Skipper and Klein (2000) provide four criteria that should be met by insurance regulation if it is to "promote the twin goals of having a competitive *and* solvent insurance market." These criteria, and sub-parts for each, are shown in Table 2.

We read these criteria as focusing on a few key goals: (1) encouraging market competition because the consumer is best served by competition rather than by regulation; (2) regulating only where market failures exist, which usually occur in respect to solvency; (3) applying regulations equitably to all insurers (specifically to locally and foreign domiciled insurers in like manner); and (4) assuring that regulatory rules and purposes are communicated in a way that is transparent and understood. These goals are consistent with the literature.

Table 2. Skipper and Klein (2000) Criteria for Successful Insurance Regulation

Criteria	Sub-criteria
1. Regulation should	• Governments should enact and enforce laws that provide an effective framework
be adequate	for competitive insurance markets
	 Governments should enact and enforce laws that establish reasonable solvency
	standards and regulation as the primary means of protecting the public
	 As part of reasonable solvency regulation, governments should establish, make
	public, and enforce appropriate and consistent rules and procedures for identifying
	and dealing with linancially troubled insurers
	 Governments should establish an insurance regulatory agency that operates in the national interact and has sufficient resources to afficiently affectively and
	importially onforce the notion's insurance laws and regulations
	Covernments should develop and implement pro-compatitive insurance regulation
	in a way and at a page that ansuras adequate protection of the public but that
	nraceade without undue delay and is subject to a reasonable implementation
	timetable
2 Regulation should	 Governments should ensure that regulation and enforcement are applied with
be impartial	consistency and impartiality between competitors irrespective of the nationality
3 Regulation should	 Insurance regulation should be limited to that which is (1) justified as providing
be minimally	meaningful protection: and (2) minimally intrusive to accomplish its purpose
intrusive	 Subject only to that regulatory oversight essential to protect the public.
	governments should allow the market to determine: (1) what financial services
	products should be developed and sold: (2) the methods by which they are to be
	sold; and (3) the prices at which they will be sold
	 Governments should ensure that insurance customers have access to information
	sufficient to enable them to make informed, independent judgments as to (1) an
	insurer's financial condition; and (2) the benefits and value of its products
4. The regulatory	• Governments should make existing insurance laws and regulations easily available
process should be	to the public, including to consumers and businesses and to insurers and other
transparent	financial services providers
	 In crafting proposed insurance laws and regulations, governments should: (1)
	make such proposals easily available to the public, including to consumers and
	businesses and to insurers and other financial service providers; (2) invite
	comment on the proposals; (3) allow sufficient time for interested parties to
	provide comments; (4) provide justification for decisions to accept and reject
	comments; and (5) establish and communicate a fair process by which decisions
	considered arbitrary or unjust can be challenged

(b) Microinsurance

Microinsurance can be defined as "a financial arrangement designed to protect lowincome people against specific perils in exchange for regular premium payments proportionate to the likelihood and cost of risk involved" (Churchill, 2007). This definition should suffice for a discussion of general regulatory themes.

We begin by noting the limited amount of academic research focused on regulation as it applies to microinsurance markets. Yanli (2009) discusses, but does not evaluate, the regulation of agricultural insurance in China, where regulatory authorities take an active role in developing agricultural insurance schemes through assuring government support for
research, data, market access, and customer protection. Describing and evaluating the Philippines microinsurance environment from a social policy perspective, Llanto (2007) proposes the need for a regulatory system that assures protection for policyholders while supporting the development of microinsurance markets. He does not take an economic approach to his analysis, nor does he detail the specifics of such a regulatory approach. Rather, Llanto's work seems to be a call for further research that will help yield answers and ultimately generate solutions for the expansion of security to people in low-income classes.

A few studies focused on other aspects of microinsurance offer some evidence of regulation-induced problems in the development of microinsurance markets. Tight regulatory schemes (see, e.g., Asfaw & Jütting, 2007) and regulation-induced transaction costs (see, e.g., Pauly et al., 2006) are some of the problems reported. An issue that seems prevalent in these markets is one of trust or, rather, distrust by the community, especially of governmental entities. When passing new regulations, therefore, assurance that those regulations will be enforced is critical in order to avoid reinforcing the population's perception of the government as untrustworthy (see Dlugolecki, 2008).

In addition to the academic literature, several NGOs and other supporting organizations (e.g., Microinsurance Network and Access to Insurance Initiative) have published detailed descriptions of the microinsurance regulatory environment in various countries, as well as suggested frameworks for sound microinsurance regulation (see, e.g., Chatterjee, 2012; Lester & McKee, 2012). Importantly, the international body of insurance regulators, the International Association of Insurance Supervisors (IAIS), also issued guidelines, which we specifically discuss below.

(c) Microfinance

Another set of literature helpful in evaluating microinsurance regulation is found in the microfinance field. Many microinsurance programs are connected to or derived from microfinance institutions (MFIs); therefore, we may well be able to gain insights from considering knowledge gleaned in MFI regulations. Existing work on regulation in microfinance emphasizes the need for:

- an industry-specific approach to MFI governance (see Mersland & Strøm, 2009),
- incorporation of country specificities in regulation to encapsulate the specificities of the macroeconomic environment and different stages of development (see Arun, 2005),
- sufficient regulatory capacity and quality (see Jalilian, Kirkpatrick, & Parker, 2007),
- recognition of the limitations of corporate self-controls in yielding desired outcomes when strong systems of transparency, monitoring and enforcement are lacking, a common condition in developing economies (see Graham & Woods, 2006).

3 CHALLENGES IN MICROINSURANCE REGULATION

As noted above, academic researchers argue that insurance regulation is socially beneficial in the presence of market failures associated with principal-agent conflicts and/or informational asymmetries. Within the microinsurance markets specifically, significant market failures have been identified (for a review, see Biener & Eling, 2012). These market failures stem in large part from uniqueness of the product and market, suggesting that microinsurance may be a setting that particularly justifies governmental intervention. In Table 3, we list issues somewhat peculiar to microinsurance as well as regulatory responses often suggested to address them. The following subsections discuss the appropriateness of such responses.

Issue	Possible Regulatory Response				
1. An effective definition of microinsurance should avoid encroaching on or distorting other insurance markets	 Define boundaries to fit specific situations where market failures exist Avoid opportunities for market arbitrage 				
2. Encourage innovations to reduce the influence of adverse selection and moral hazard that generate from relatively high administrative costs due to low coverage and low premium levels	 Encourage low-cost distribution channels and innovative partnerships Facilitate licensing procedures that account for the lower product complexity and the preference for intermediaries familiar to the consumer Provide certainty of allowable returns, given the need for higher returns on smaller premiums for a market to develop 				
3. Enhance product quality and consumer knowledge to address high levels of skepticism (lack of trust)	 Identify and offer programs to enhance financial literacy, including understanding how the community benefits from some (but not all) members receiving compensation for losses Assure availability of underlying benefits, such as healthcare, covered by any available policies Assure high-quality claims payment and claims payment processes, including a defined complaint mechanism 				
4. Facilitate the transition of small, informal microinsurance schemes to regulated entities	 Consider capital requirements that are different from those of traditional markets Support access to reinsurance and other risk transfer solutions Provide training to assure a knowledgeable and capable workforce Enforce laws against corruption to build up trust 				

Table 3. Central Challenges in Microinsurance Regulation

(a) Define microinsurance to limit arbitrage and enhance market

development

Any specific microinsurance regulation requires a definition of the product, market and/or institution in order to distinguish it from other insurance products, markets and/or institutions that are subject to a different set of regulation. To be effective, the definition ought to account for the characteristics of the product and industry that suggest separate regulation in the first place. An appropriate definition also will avoid encroaching on and/or distorting other insurance markets. That is, the definition and resulting regulations need to be written in a manner that limits incentives for regulatory arbitrage.⁴ To date, only six countries (Brazil, India, Mexico, Peru, the Philippines, and Taiwan) have specific microinsurance regulation.⁵ In these jurisdictions, three methods of categorizing microinsurance and microinsurers are employed. One is based on product coverage, such as the limit of insurance and/or premium falling below some designated level. A second is based on the market served, such as policyholders with incomes below a given threshold. The third is based on characteristics of the entity taking on the risk (such as asset size) or, sometimes, the type of distribution channel (see IAIS, 2007; Churchill & McCord, 2012).

While a clear definition is important for deciding which contracts and activities are subject to the regulation, regulators also face the challenge that the definition be appropriately written so that actual market failures are the focus of the regulation. The concern is that an inappropriate definition may prevent some participants from entering the market, which could restrict product innovation and, ultimately, the goal of improved competition.⁶ Furthermore, variations in regulation across different market segments need to be designed to limit unwanted market distortions that generate from regulatory arbitrage. For instance, if lower capital requirements are implemented for products of a particular size, will insurers then seek means to sell more of those products than the market would support otherwise, by for example, selling two or three policies to the same individual, rather than one policy of the size desired by the consumer?

The question arises, then, as to whether these definitions address issues of market failure. In microinsurance we observe multiple areas of potential market failures associated with asymmetric information. We observe the standard issues of solvency, where the regulator is in a better position than the individual policyholder to implement successful monitoring of financial strength. Beyond this traditional area, we also observe significant asymmetric information in the form of adverse selection and moral hazard, far beyond what is encountered in the conventional insurance market. In the conventional market, insurers have access to various devices such as effective underwriting, pricing, and use of deductibles and exclusions to maintain acceptable levels of adverse selection and moral hazard. In the developing markets, however, data to estimate losses are less easily available, and perhaps more importantly, the consuming population is unfamiliar with underlying concepts of insurance. This lack of insurance knowledge often leads to distrust and discouragement when losses are not covered for reasons that tend to be understood in the conventional insurance markets, such as for example, for pre-existing conditions.

These particular characteristics of microinsurance tend to mimic variations in existing product lines. For instance, we differentiate regulations across personal and commercial insurance, in part because of the perceived differences in consumer insurance expertise. Microinsurance demonstrates similar needs with an even more extreme lack of financial literacy. We take the position, therefore, that the definition of microinsurance ought to be one that distinguishes it as a unique product line. Some insurers will be specialized mono-line microinsurers. Others will be multi-line insurers with microinsurance as one line of coverage. We anticipate that the definition of microinsurance, therefore, will be a combination of target consumer (relatively low income) and policy form (generally low limits and simple coverage). In making this recommendation, we also encourage regulators to recognize risk differences between the micro and conventional forms of coverage, differences that ought to affect capital requirements. Doing so will aid the development of mono-line microinsurers that otherwise are not able to meet the standard insurance capital standards, a topic we discuss further in the following pages.⁷ We also recommend that regulators be active participants in enhancing financial literacy, particularly among the low-income population.

(b) Encourage innovations that minimize administrative costs

A major problem on the supply side of microinsurance is that policy administration involves substantial fixed and variable costs; hence, as coverage amounts decline, administrative costs become a larger portion of the premium and, by extension, the portion of the premium devoted to pay claims declines. These are conditions under which adverse selection becomes more likely. Furthermore, efforts to reduce administrative costs, such as minimal underwriting and claims adjusting procedures, are also associated with increased adverse selection as well as moral hazard. In other settings, insurers have dealt with these informational issues through underwriting and product mechanisms and the concern is that regulatory interference may harm the market rather than benefit it (see Herring & Pauly, 2001). Regulatory limitations on permissible underwriting criteria, while intended to expand coverage to a greater array of policyholders, can actually shrink product availability (see Browne & Frees, 2004).

A number of creative microinsurance innovations demonstrate that technology may be a key mechanism through which administrative costs can be reduced. Cell phones, for instance, have been used to issue policies, pay premiums, maintain health status information, and, ultimately, make claim reimbursements. Innovative distribution channels have been key to successful expansion of the microinsurance market (i.e., reaching a larger percentage of the target population; see Lloyd's & Microinsurance Centre, 2009). Interestingly, some of these techniques are now being used in the developed market as well (see Burris, 2012). Such reverse innovations provide one rationale for extending regulations across the entire market rather than solely to the microinsurance market.

Similarly, organizations are entering into creative partnerships for purposes of expanding microinsurance availability. An example is Kilimo Salama's partnerships across insurers, seed distributors, communication and weather satellite organizations, the government, and NGOs in Kenya. Each member of this partnership has a vested interest in market expansion and each contributes specific expertise to the success of the whole.

Sometimes these innovative mechanisms and partnerships, however, are not permitted by the regulator. Licensing requirements are intended to protect policyholders from insufficiently informed and potentially unethical agents and insurers. Yet Wiedmaier-Pfister (2004) argues that requirements for distribution channels often are either too high, thereby decreasing market resources, or not sufficiently restrictive, consequently neglecting customer protection. Achieving a balance between customer protection on the one hand and innovation and market efficiency on the other is an important task for regulatory authorities generally, not just in this setting.

Cost-efficient techniques are particularly important in microinsurance because of the low premium value per policy. These techniques reduce adverse selection by yielding a larger portion of each premium unit to pay for losses. Similarly, the low premium value leads insurers to seek a higher rate of return on microinsurance than from other coverages. Incentives to enter the market are reduced when regulators forbid higher returns and/or fail to offer some sense of certainty about what is an acceptable return. This outcome is similar to the need in the microfinance area for higher interest rates on microloans than on conventional loans. Importantly, even those higher rates are still far lower than what individuals can obtain through informal means (see Aiyar, 2010). A definition of an "acceptable return" in microinsurance is thus needed.⁸

(c) Enhance financial literacy and availability of services

Another distinctive feature of microinsurance markets is the target population's lack of experience with financial services in general and with insurance specifically. This situation often leads to a high rate of moral hazard and adverse selection. In a review of the literature on microinsurance, Biener and Eling (2012) find that asymmetric information appears to be especially problematic for microinsurance markets, which experience high rates of fraud, antiselection, and moral hazard. There are a variety of reasons for this situation, including general distrust of governments and large organizations in many of the regions where microinsurance is most needed, as well as a lack of understanding of insurance by the target population. Even among people who have been exposed to insurance throughout their adult lives, the idea that one should receive something tangible in return for a premium is prevalent.⁹ A recent interesting twist on moral hazard in insurance markets comes from the behavioral economics field where researchers have identified ethical "blind spots"; these occur, for example, when

we tell ourselves that adding the costs of car repairs that had nothing to do with the covered accident is legitimate because we have paid premiums for years without making a claim (see Bazerman & Tenbrunsel, 2011). Among a population new to the concept of insurance, ethical blind spots may be even more prevalent.

Below we discuss the important role played in the microinsurance market by small, informal insurers. Their importance generates from a variety of conditions, including an ability to address moral hazard and adverse selection. Another successful method in reducing moral hazard and adverse selection is implementation of programs that improve financial literacy. This is well illustrated by an experiment conducted by Karlan et al. (2011). They conducted a randomized field experiment in rural Ghana in which they offered two types of loans: crop price indemnified loans and loans without the indemnification (insurance) component. The indemnity component forgives 50% of the loan if crop prices drop below a threshold price. Both products were offered at the same interest rate. Loan uptake was high among all farmers, but both products were equally popular. Furthermore, households that demonstrated greater risk aversion were *less* likely to purchase the product with insurance, suggesting a lack of product understanding. This sort of evidence has led regulators and others, such as in Ghana, Brazil, and India, to initiate literacy campaigns.¹⁰

Encouragement of group insurance schemes also yields positive results in reducing moral hazard and adverse selection (see Biener & Eling, 2012). As observed in conventional markets, group insurance, where all group members are provided similar insurance coverage without individual underwriting, can be effective in maintaining low administrative costs. When those groups exist because of reasons other than the availability of insurance, they also can address issues of adverse selection directly (that is, members are not "selecting" membership because of the insurance). Some microinsurance mechanisms further structure coverage in a manner that encourages members to behave in a way supportive of the group rather than solely on their own behalf. Doing so will reduce moral hazard.

A key factor toward incentivizing insureds to be open, honest, and trustworthy, is for the insurance marketplace to deserve this type of trust. Underlying benefits must be made available before the insurance makes sense, while the claims adjusting process needs to be fair and honest, and not too restrictive. Especially among a population unfamiliar with insurance, a method to file complaints and be offered thorough and thoughtful responses to their concerns regarding claim denial is necessary for the community to support an insurance initiative. Without such an approach, the community quickly will become disillusioned and unwilling to participate in the market.

(d) Facilitate the transition of informal to regulated entities

Quite a bit of successful microinsurance is offered through small, local, somewhat informal providers and distributors. These could include, for example, a local religious entity or a community organization. The local and informal nature of the coverage tends to address consumers' general lack of trust of outsiders and especially large bureaucracies because the salesperson and policyholder are likely to know one another or at least know of one another. Their close association with the community also can address concerns about adverse selection and moral hazard through agent knowledge of the community, lower monitoring costs, and ability to educate community members about insurance concepts (see, e.g., Dercon et al., 2006).

Less formal processes, however, are vulnerable to problems of their own, including the law of small numbers, possibly ill-informed providers of coverage, and even the potential to take advantage of the participating members through misplaced trust. This is an area in which regulation can assist by assuring appropriate product design and delivery mechanisms (see Wiedmaier-Pfister & Chatterjee, 2006) or by mandating appropriate licensing procedures. For example, in a pilot program in Brazil, researchers found that a local agent, well known to the community, was far more successful in generating trust in the insurance mechanism than were

the other agents. The study sponsors suggested that agent licensing might focus on moral character and reputation more than on technical skills, with those technical skills being taught as needed over time (see CNseg, 2011).

Various regulations, especially licensing and capital requirements as they are currently implemented, may constitute significant barriers for the smaller microinsurers and their intermediaries. Successful regulation will find the proper balance between those requirements necessary to protect consumers and those which may not be appropriate for specific microinsurance characteristics. Beyond the requirements itself, it is especially relevant for regulatory authorities to facilitate the transition process of informal schemes to regulated entities. Cull and Demirgüç-Kunt (2011) show negative effects of regulatory compliance in the microfinance domain. Specifically, they observe that for-profit MFIs reduce their outreach activities to women and in areas costly to reach (such as rural areas) in response to solvency regulations. Less profit-oriented institutions, such as NGOs, respond to solvency regulation by maintaining their outreach efforts at the expense of higher returns. Cull and Demirgüç-Kunt (2011) focus especially on the size differentials between MFIs and more conventional institutions in explaining their results. If these conditions extend to the insurance market, we would imagine that capital requirements and limited access to reinsurers will pose major barriers to small microinsurers, and may impede competitive markets, especially if not based on organizational risk.

We therefore recommend consideration of capital and reinsurance requirements that encourage overall risk management and diversification, providing a broader set of options to all insurers, including microinsurers, than may currently exist. Small microinsurers with limited product diversification may not require the same level of overall capital as would the insurers selling more complex and varied products (products with higher limits of coverage and a broader list of covered perils). A risk-based capital approach may be useful in this setting (see also IAIS, 2007).¹¹

The potential systemic risk of small, focused microinsurers, however, may call for diversification across international boundaries through reinsurance or other alternative risk transfer mechanisms. For reinsurers, too, the opportunity to diversify across microinsurers functioning in numerous geographies could make their portfolios more efficient and effective. It is not uncommon in emerging insurance markets for regulators to require reinsurance from domestic carriers with the intent of supporting the local economy; yet, doing so can have a perverse effect of making the insurance market more expensive and too concentrated for the underlying risks. The result is a more lackluster market rather than one that is expanding.

We focus on support of local microinsurers and their agents in part because of the trust they engender. Lack of trust has been identified as a major barrier to successful development of microinsurance markets (see, e.g., Banerjee & Duflo, 2011). Therefore, in addition to support of the local microinsurers and their agents, governments should include elements of "fit and proper" licensing requirements that work towards assuring trustworthiness. The agents and insurer management must meet various requirements of honesty and fair dealing to be "fit and proper" members of the insurance community. Furthermore, requirements need to assure sufficient knowledge by those distributing coverage. Management education conducted by the regulator could be offered free of charge and on a voluntary basis to trusted members of the community to serve as local agents. In addition to the fit and proper requirements, the enforcement of laws against corruption, such as when an agent accepts premiums that are put into his or her own pocket rather than towards the issuance of insurance coverage, is an important element to build up trust.

4 REVIEW OF CURRENT REGULATORY SCHEMES

Insurance regulation varies substantially across jurisdictions and is often bewilderingly complex even within a single jurisdiction. Our discussion of general regulatory characteristics is therefore conducted at a basic level and only for purpose of comparing them with specific microinsurance regulatory systems. Microinsurance regulations are covered in more detail.¹²

(a) General global regulatory schemes

The IAIS has developed a set of "preconditions for successful insurance regulation." These are broad underlying market and economic conditions that are necessary for an insurance market to flourish. They are not conditions within the purview of insurance regulators, yet the regulators have stated that these conditions are critical to their own success in developing a viable insurance market. The preconditions are listed in Table 4.

Table 4. IAIS General Preconditions for Effective Insurance Regulation

1.	Sound macroeconomic and financial sector policies
2.	Well-developed public infrastructure
3.	Effective market discipline in financial markets
4.	Appropriate public safety nets
5.	Efficient financial markets

The IAIS also has developed a set of "Insurance Core Principles (ICP)," which are intended to define a globally accepted framework for supervision within the insurance sector. The ICPs are envisioned as representing the highest level in the hierarchy of supervision, prescribing essential elements of a supervisory regime that promotes a financially sound insurance sector while providing an adequate level of policyholder protection (see IAIS, 2011). National regulatory standards are the next level in the hierarchy and can be linked to specific ICP statements, which can be related to the main areas of insurance regulation as defined by Skipper and Kwon (2007). The ICPs also clearly define the role and scope of the insurance supervisory authority.

Just recently the IAIS moved one step closer to providing microinsurance regulation by issuing an application paper on the "regulation and supervision of inclusive insurance markets," consistent with the G20 support of the Principles of Innovative Financial Inclusion. These efforts are viewed as being focused on microinsurance markets. Comments have been received on the application paper, and a working group of representatives from the IAIS and the Microinsurance Network has been formed (see IAIS, 2012).

(b) Existing microinsurance regulatory schemes – generally

As mentioned previously, six countries provide insurance regulation focused solely on microinsurance (Brazil, India, Mexico, Peru, the Philippines, and Taiwan). Moreover, a number of other countries are developing or implementing microinsurance regulation at the moment (Pakistan, South Africa, CIMA countries). We present an overview of the regulatory environment in these two sets of countries (those that have implemented, and those considering implementing, specific microinsurance regulations). Our intention is to evaluate the extent to which the existing mechanisms address issues of market failure and therefore qualify as socially beneficial regulatory systems.

We begin with consideration of the extent to which the IAIS preconditions for effective insurance regulation exist. While these preconditions are outside the sphere of influence of insurance regulatory authorities, they are critical to market success.

There are many possible proxies for measuring the general environment of insurance markets; we use indicators from the World Bank (2011) and the Heritage Foundation (2012). In Table 5 we present measures for each precondition for each country/region in which specific microinsurance regulation either exists or is under serious consideration.¹³ We also provide comparison data for the highly developed markets of the United States, the United Kingdom, and Germany.

Country	Government	Rule	Regulatory	Control of	Economic		
	Effectiveness ^a	of Law ^a	Quality ^a	Corruption ^a	Freedom ^b		
	Percentile ranks						
Panel A: Countries with microinsurance-specific regulation							
Brazil	0.57	0.55	0.56	0.60	0.45		
India	0.55	0.55	0.39	0.36	0.33		
Mexico	0.62	0.34	0.59	0.45	0.71		
Peru	0.47	0.32	0.67	0.50	0.78		
Philippines	0.52	0.35	0.44	0.22	0.42		
Taiwan	0.85	0.82	0.84	0.74	0.91		
Panel B: Countries with no microinsurance-specific regulation							
CIMA ^c	0.17	0.22	0.25	0.20	0.26		
Pakistan	0.26	0.26	0.30	0.12	0.34		
South Africa	0.65	0.58	0.63	0.61	0.62		
Panel C: Developed insurance markets benchmarks							
US	0.90	0.91	0.90	0.86	0.95		
UK	0.92	0.95	0.97	0.90	0.93		
Germany	0.92	0.92	0.94	0.93	0.86		
Notes ^a 2010 Worldwide Covernance Indicators by the World Penk (2011)							

Table 5. Regulatory Environment

Notes ^a 2010 Worldwide Governance Indicators by the World Bank (2011)

^b 2012 Index of Economic Freedom by the Heritage Foundation (2012)

^e Average values for the CIMA countries

Judging from the proxies for regulatory environment, the nations in which specific microinsurance regulation exists, and especially where such regulations are being considered, have quite some distance to travel before reaching the same level as the three highly developed insurance markets. In some instances, it could be more important to focus on achieving basic government, health, and welfare conditions than to expend energy improving insurance regulation. However, one purpose of expanding microinsurance markets is precisely to foster economic development. As Outreville (2012) notes in his recent survey of the literature, researchers find significant evidence linking a growing insurance market to a growing economy. The causal direction, however, is not clear and may be mutually reinforcing.

We are intrigued by variations across these countries and regions. Africa has seen significant growth of the microinsurance market (see Churchill & McCord, 2012), and yet it lags far behind in basic economic conditions. South Africa is the exception in these data and, not surprisingly, because it's insurance market has been active for a longer period and is more advanced.¹⁴ In contrast with most African nations, Taiwan demonstrates a relatively strong

and developed government and economy.¹⁵ Specific regulations for microinsurance products, therefore, may be appropriate more widely than just in emerging economies, given Taiwan's introduction of such rules. Perhaps lessons learned from microinsurance markets in emerging economies offer opportunities for "reverse innovations" that can assist in extending economic advantages to low-income populations in more advanced economies.

(c) Existing microinsurance regulatory schemes – specifically

(i) Defining the product and the market

If specific rules are to be applied to microinsurance products and markets, those products and markets need to be defined. As noted above, three approaches to this issue have been employed to date: define the product, define the target population, or define the risktaking entity. Brazil, India, Mexico, and Peru all define microinsurance in terms of product characteristics, while Taiwan defines microinsurance in terms of the "economically disadvantaged" target population to be served, that is, income levels of the target population. The Philippines uses both a product definition and an institutional definition through what are referred to as Mutual Benefit Associations (MBA), entities that are non-profits designed primarily to offer life, medical, and unemployment benefit coverage to association members. Not all microinsurers must be MBAs; rather, MBAs are given special recognition as microinsurers.

Relevant product characteristics typically incorporate lower and upper limits for coverage and upper limits for premiums. In India, explicit boundaries are set for coverage levels, contract terms, and insured age. The new microinsurance regulation in Brazil clearly sets maximum levels of microinsurance coverage besides also defining the general classes of insurance products, terms of coverage, exclusions, means of premium payment and other characteristics in different lines relatively precisely. In 2009, Peru significantly revised its microinsurance regulation by moving from a quantitative definition of microinsurance to a qualitative definition referring to the provision of protection for low-income populations without setting limits on either coverage or premiums (see Ingram & McCord, 2011). The regulatory authorities explicitly address the problem created by defining microinsurance on a quantitative basis by arguing that limits on prices and benefits are potential impediments for the development of innovative microinsurance products (see SBS, 2010). We believe that the key issue in selecting among these (and possibly other) alternatives is to consider where information asymmetries will be greatest, and define the product and market to incorporate those situations.

(ii) **Distribution**

Regulators set relatively strict boundaries on microinsurance distribution, often narrowly defining the types of entities or individuals allowed to sell coverage. India's rules contain four categories of distributors: brokers, agents, corporate agents, and specific microinsurance agents approved only for non-profit institutions. Microinsurance agents sell only microinsurance and are granted more favorable regulatory requirements (see IRDA, 2005). Brazil and the Philippines implemented a similar system for specific microinsurance agents and brokers but it is not restricted to non-profit organizations. These agents and brokers are not permitted to sell other products and are subject to less strict licensing requirements in return (see Philippine Insurance Commission, 2010).¹⁶ Taiwan authorizes the distribution of microinsurance through agents and brokers who are permitted to sell either conventional or microinsurance (see Taiwan Insurance Bureau, 2009).

(iii) Product design and pricing

In most countries where specific microinsurance regulation exists, specific regulations have been implemented regarding product design and pricing. Both India and the Philippines, for example, require that microinsurance policies be easily understood and bear a specific obligatory microinsurance logo. The Brazil regulations also require simple terminology that is easily understood by the insured. Taiwan includes these same types of requirements and also limits the term of coverage to no longer than one year and no more than one peril covered per policy (see Taiwan Insurance Bureau, 2009). Restricting the number of perils covered under one policy makes sense when it comes to reducing product complexity to account for low levels of financial literacy of the target population. It also is appropriate when data availability is limited, restricting the ability to analyze underlying risks as well as dependency among risks (see, e.g., Biener, 2013). Single-peril policies, however, limit the opportunity to experience efficiencies of bundling together coverages for several causes of loss. Furthermore, the policyholder is not particularly concerned with the precise peril that causes loss, just that loss occurs. If the target population is likely to need and want coverage for more than a single peril, it may be wise to devise a method to permit these broader contracts.

Rate restrictions similarly have the potential to dampen market opportunities for the target population. While insurance premiums are subject to some form of regulatory intervention in most areas around the globe, such restrictions tend to yield undesired outcomes, even when done with the best of intentions. Research on the US market consistently finds perverse effects of pricing restrictions, such as the reduced coverage availability in the US auto market (see Weiss, Tennyson, & Regan, 2010; Harrington, 1990). Similarly, rate restrictions in voluntary private health insurance markets intended to increase access to health insurance for high-risk individuals (e.g., with chronic diseases) sometimes lead to the exclusion of those risks from health coverage due to the insurers' anticipation of losses from coverages for high-risk types (see Van de Ven et al., 2000).¹⁷

The microinsurance market also has been subject to pricing restrictions and distortions, either through upper limits placed on premiums or through the use of direct premium subsidies. Premium subsidies may have positive short-term effects by increasing demand and reaching underserved populations; however, long-term incentives and willingness to pay might be detrimentally affected, leading to higher aggregated costs to

society as a whole.¹⁸ These market interventions often result in higher premiums as well. When governments and, by extension, their populations believe that access to a product or service ought to be increased, methods that increase resources rather than reduce prices tend to be most effective. Hudon and Traca (2011), for instance, identify improved efficiencies for MFIs that receive "smart subsidies," which are those that are definitive, time-designated, and limited. Furthermore, the subsidies are most effective when they go to the lending institution rather than the consumer.

We recommend, therefore, that governments not subsidize insurance premiums directly. Rather, we recommend that efforts be made to expand insurance for underserved populations by: (1) working to improve earning opportunities for these underserved populations so that they can afford insurance; (2) educating the populace about risk and insurance to increased demand as well as lessen moral hazard; (3) providing mechanisms to improve insurer efficiency such as sharing data and expertise; and (4) working toward lowering the cost of and increasing access to needed services, such as healthcare.

In setting regulatory policy, true market failures as distinguished from undesirable market outcomes should be the focus. Once market failures are identified, government interventions that will address those failures most effectively should be considered. Specific areas where governments likely have some advantage include (1) educating, both the public and the insurers (e.g., salespeople, claims adjusters, underwriters, actuaries); (2) providing a platform to share data to deal with concerns of small numbers (e.g., loss, weather, health, or mortality data); and (3) lowering regulatory barriers, for the industry as a whole, perhaps, not just microinsurance.

(iv) Prudential (solvency)

Many researchers suggest that prudential regulation, that is, solvency, is the primary area where insurance regulation is obviously supported by an underlying economic rationale. Insurers tend to have information regarding their risk-taking strategies that is superior to that known by policyholders (see Klein, 2012 for a discussion). This is precisely the sort of asymmetric information situation where regulators may be able to achieve a socially beneficial outcome through interference with the market.

For the past several decades, solvency regulation has been a major focus of regulatory bodies and academic researchers, with the resulting development of risk-based capital standards in the United States, Solvency II in the European Union, and initiatives in New Zealand, Switzerland, and elsewhere urging the greater use of modeling and principles-based approaches to solvency requirements. The developing world, however, still tends to rely on simple rules of minimum capital levels in absolute terms (i.e., without considering risk). Holzmüller (2009) and Cummins, Harrington, and Niehaus (1994) offer evidence of concerns with the rules-based approach as well as a set of criteria to evaluate the appropriateness of insurance solvency regulations. In the light of potential weak enforcement of regulation in microinsurance markets, it is, however, not clear whether principles-based approaches to solvency requirements will eventually result in the desired outcomes (see Di Lorenzo, 2012).

Capital requirements are a source of concern for many local microinsurers, a concern that is supported by studies showing that capital requirements often are too high for the small policies sold by locally organized microinsurers (see, e.g., Wiedmaier-Pfister, 2004). In India, for example, capital requirements for microinsurers are equal to those of conventional insurance companies (see Sinha & Sagar, 2009). High capital requirements can hinder the growth of the microinsurance industry by implicitly requiring more costly risk transfer solutions such as reinsurance from domestic reinsurers (rather than from the international market as a whole). Some support for this hypothesis is found by Berry-Stölzle, Hoyt, and Wende (2010), who observe that larger insurers in emerging markets, those that can more easily meet capital requirements stated as an absolute amount and who have greater access to alternative capital sources, have higher performance. Initial capital requirements also hinder market entry. In India, for example, the initial capital requirements for registering a microinsurance business amount to INR 1 billion (US\$ 18 million). Similarly, the Taiwan regulatory authority applies the same capital requirements to microinsurers as to conventional insurance companies, with the exception of group-insurance policies for which other, not explicitly specified, rules may apply (see Taiwan Insurance Bureau, 2009). The minimum initial capital requirement for a locally incorporated insurance company is NT\$ 2 billion (US\$ 67 million; see Wong, 2011).

The Philippines, in contrast, implemented a separate system for MBAs not able to meet the minimum capital requirements. These associations must register with the regulatory authorities and increase their capital over time. The initial capital requirement is PHP 5 million (US\$ 120,000). This approach has proven successful in encouraging previously informal and unsupervised microinsurers to approach formalization under the regulatory framework (see Bester, Chamberlain, & Hougaard, 2008). After amending the microinsurance regulatory framework in 2010 (see Philippine Insurance Commission, 2010), the Philippine government increased capital requirements for all insurance companies while also introducing separate microinsurance capital regulations. Microinsurers, other than MBAs, are now required to hold PHP 500 million (US\$ 12 million; see Philippine Department of Finance, 2012). This is a substantial sum, but lower than that required of other insurers, some of which are required to hold PHP 1 billion (US\$ 24 million). MBAs continue to enjoy the lower requirements as noted above (see Philippine Insurance Commission, 2006). In addition to initial capital requirements, the Philippine Insurance Commission, 2006). In addition to solvency, liquidity, and leverage (see Philippine Insurance Commission, 2011).

South Africa is in the process of implementing a new comprehensive regulatory framework for microinsurance that is expected to come into effect in 2013. Currently, microinsurers fall under the regulation for long- and short-term insurance, for which minimum capital requirements of ZAR 10 million (US\$ 1.20 million) and ZAR 5 million

(US\$ 0.60 million) are applicable, respectively (see Bester et al., 2009). Under the new microinsurance regulatory framework, ZAR 3 million (US\$ 0.36 million) is envisioned as upfront capital (see South African National Treasury, 2011).

Other African countries, specifically the CIMA countries, are on a path to separate microinsurance regulations, having agreed in 2012 to implement new microinsurance regulations (see Microfact, 2012). Pakistan also is on track to develop microinsurance regulatory rules and is in the process of drafting rules in consultation with stakeholders (see Abores, 2011).

Capital requirements in developed insurance markets such as EU countries and the United States include both a floor or minimum requirement and a risk-adjusted level above that floor based on the insurer's own characteristics. Somewhat surprisingly, the minimum requirements in some of the micro markets are relatively high even when compared with the EU, where insurers are required to hold a minimum of US\$ 2.7 million (non-life) and US\$ 3.9 million (life) of capital (see European Parliament & Council, 2009), and the United States, where minimum capital requirements vary by state, but are in the range of single-digit million US\$ amounts (see NAIC, 2012). These figures make the microinsurance capital requirements seem somewhat inappropriate. We encourage regulators and governments to consider lower requirements as well as, and perhaps more importantly, risk-based requirements. The IAIS recommends consideration of "proportionality," which would adjust requirements based on an insurer's size and risk status. We further suggest that policymakers work to make rules consistent across all jurisdictions to limit regulatory arbitrage.

5 CONCLUSIONS

Private market mechanisms intended to address various social issues often referred to as "social entrepreneurship" or "social innovation," have expanded significantly in the past 20 years. Perhaps Muhammad Yunus's Grameen Bank, for which he received the Nobel Peace Prize, is the best known of these. Social, cultural, and economic conditions all have played a role in the decreasing involvement of governments and the increasing use of private markets in addressing social issues. Microinsurance fits well within this framework.

Swiss Re (2010) estimates a potential of US\$ 33 billion in premiums from a robust worldwide microinsurance industry market to low-income, but not destitute individuals, only a small fraction of which has been tapped to date. An enormous potential exists not only for insurer revenues but also for improving the lives of many. To make this a reality, we need to understand why it is not in place already. A number of authors highlight problems in the microinsurance market, including financial literacy (or lack thereof), trust in governments and outside organizations (or lack thereof), administrative costs of product sale and delivery, and the basic availability of underlying services (e.g., healthcare). In this paper, we evaluate the regulation of microinsurance with the aim of identifying those areas where regulators can assist (and those where they can hamper) the development of microinsurance markets.

We make the following conclusions and recommendations. First, we encourage regulators to avoid developing regulatory arbitrage between conventional and microinsurance markets. Specifically, we encourage clear boundaries between the two business forms so as to limit undesired market distortions.

Second, we encourage regulators to appreciate the differences between microinsurance and conventional insurance markets, developing programs that address the uniqueness of each. Early efforts in developing microinsurance products as well as regulation tended to treat the fields the same, just smaller policies in the microinsurance domain. As more nuanced approaches to the microinsurance market have emerged, greater successes have been experienced as well (see Churchill, Dala, & Ling, 2012).

Broadened distribution channels, not just for microinsurers, but across the spectrum of insurers, may be appropriate as technology evolves. Similarly, risk-based capital and reinsurance requirements will improve all underlying insurance mechanisms.

We also encourage regulators to consider financial literacy initiatives. There is good reason to believe that such initiatives can significantly improve the lives of many. This type of activity also meshes well with the governmental goal of providing security to the populace. Who better to undertake the role of enhancing financial literacy than one without a vested interest beyond true understanding?

Lastly, we encourage our academic colleagues to engage in research on this topic, and insurers and regulators to freely provide data for such research. Not only will the research aid in developing successful microinsurance markets, but it may well lead to successful innovation in the conventional markets.

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- ¹ We believe that microinsurance is not likely appropriate for people at the very bottom of the pyramid; therefore, our estimates of the market may be more in the range of 1.5 to 2 billion individuals.
- ² Being relatively new, microinsurance has not yet received extensive specific regulatory attention. Just six countries provide insurance regulation focused solely on microinsurance. India was the first in 2005, followed by the Philippines (2006), Peru (2007), Mexico (2008), Taiwan (2009), and Brazil (2012). Other countries, notably Pakistan, South Africa, and a coalition of other African countries, are either considering or in the process of implementing specific microinsurance regulation. The coalition of African countries is the Inter African Conference for the Insurance Market (CIMA). Member countries are Benin, Burkina Faso, Cameroon, the Central African Republic, Congo, Côte d'Ivoire, Gabon, Equatorial Guinea, Guinea-Bissau, Mali, Niger, Senegal, Chad, and Togo.
- ³ Programs designed to expand coverage, such as limitations on health insurance underwriting restrictions (see Browne & Frees, 2004; Hoffman & Browne, 2012) tend to have adverse effects of higher prices and in some instances lower supply. Similar effects have been documented in efforts to place caps on prices (Klein, 2012; Weiss, Tennyson, & Regan, 2010; Harrington, 1990, among others)
- ⁴ Regulatory arbitrage can occur when there are two or more sets of regulations applicable to a microinsurance product and/or insurer; e.g., when a product qualifies for both regular and microinsurance regulations. In such a situation, insurers will naturally classify their products such that costs (e.g., capital requirements) are minimized.
- ⁵ Pakistan, South Africa, and other African countries are considering specific regulation, and are likely to implement it soon.
- ⁶ For example, some countries define microinsurance with regard to products addressing a specific target population in a certain range of income. Setting such thresholds is challenging and likely excludes some of the potential target population.
- ⁷ It is likely that those insurers offering microinsurance only (i.e., mono-line microinsurer) are required to hold more equity capital as compared to insurers offering multiple lines including an equal line of microinsurance business (i.e., microinsurance as business line) because of lower diversification of risk. However, compared to approaches of simple minimum capital rules for all insurers presently applied (see Section 4(c)), significant reductions of capital requirements are to be expected for the microinsurance space if based on risk.

- ⁸ Around the globe, insurance prices are regulated in a variety of ways. Sometimes they are capped, sometimes the assumptions used to set them must be approved, sometimes they must follow principles of being "adequate," "not excessive," and "not unfairly discriminatory." This latter set of statements is found in most US jurisdictions, with interpretation open to the regulator. Adequate typically is connected with solvency concerns, while "not excessive," would connect with an acceptable return to insurers, after considering operating and loss costs. For low-premium products, a higher proportion is expected to go to the insurer simply to make the effort worthwhile. As a "return," the payment can look large. For example, one that allows profits commensurate with the higher risk of microinsurance. Another question which has been studied in this context is the question of the optimal ownership form for providing microfinance. Most providers, both historically and today, are non-profit organizations or cooperatives, while policy papers advocate shareholders firms (see Mersland, 2009).
- ⁹ According to a study from GDV (2011), more than 20% of Germans consider insurance fraud to be a "trivial offence" which is committed by almost everyone at least once.
- ¹⁰ The Brazilian Insurance Confederation (CNSeg) has initiated an interesting program titled Estou Seguros and the Microinsurance Academy (MIA) in India has implemented a variety of creative programs; these are just two of many other examples.
- ¹¹ One major issue with regard to the estimation of the microinsurer's risk and the required capital is that small microinsurers may not have the resources needed to complete such analyses effectively. Here is an instance where the regulator could play an important role by undertaking much of the analysis, developing standard models as well as providing technical support.
- ¹² Throughout the paper we do not discuss Sharia-conforming insurance products (Takaful) in detail although these also can be interpreted as a kind of regulation. We refer to El-Hawary, Grais, and Iqbalb (2007) and Pepinsky (2013) for more details about Sharia-conforming financial products.
- ¹³ In South Africa, draft microinsurance legislation is supposed to be submitted to parliament in early 2013 and implementation is expected toward the end of 2013/2014. The countries of CIMA signed an agreement to implement microinsurance regulations but we are unaware of definite implementation plans. Pakistan currently is in the first consultation phase of its proposed microinsurance regulatory framework, which is expected to conclude at the end of 2012.

- ¹⁴ South Africa has long supported the insurance industry, with the Insurance Institute of South Africa dating to 1898. The populace, therefore, has a stronger knowledge base and familiarity with the industry than in many other developing nations.
- ¹⁵ The International Monetary Fund (IMF) classifies Taiwan as an advanced economy (see IMF, 2012).
- ¹⁶ Microinsurance agents and brokers do not have to pass the regular licensing examination, but instead must participate in an approved training program and take a final examination (see Philippine Insurance Commission, 2010).
- ¹⁷ Insurance rate restrictions below what the market would yield always imply a cross-subsidization scheme between high-risk and low-risk types that will only be viable if the insurer has a sufficient share of low-risk types that compensate for the losses from high-risk types. Adverse selection effects may, however, easily put the viability of the scheme at risk (see Van de Ven et al., 2000).
- ¹⁸ Evidence for undesired market distortions from subsidies can be found for agricultural markets, flood insurance in the United States, and even some microinsurance markets. Subsidizing microinsurance may create incentives for risky behavior and permanently reduce willingness to pay (see Latortue, 2006). For example, in India, a subsidized insurance premium was provided for individuals below the poverty line. After two years, the subsidy was removed; less than 30% of the members wanted to renew their policies. If subsidies are granted to increase access of high-risk types, e.g., to health insurance, there is huge potential for adverse selection into the insurance pool because low-risk types will not be willing to pay substantially more for the coverage and will drop out of the pool, resulting in increasing average losses (see, e.g., Weiss, Tennyson, & Regan, 2010).



Exam 6 International Study Note – Solvency

Ralph Blanchard, FCAS

Abstract

The syllabus for Part 6-I includes papers from a variety of organizations produced over the relatively recent past. Despite our best efforts in searching for worthwhile material, some of those papers are dated in certain areas, contain information more focused towards life and annuity contracts rather than property/casualty contracts, or were not as clear as we would have liked. This study note attempts to fill those gaps in the other syllabus materials.

The study note is organized by Syllabus reading, including page numbers (when relevant) where a need to supplement, update or correct that material was identified.

1. OVERALL

The Broad definition of payments to policyholders

Several of the readings in the syllabus reference payments to policyholders. This should be interpreted broadly to include both payments to and on behalf of policyholders. For example, the claimants that might be paid under policies covering liability to third parties (such as mandated motor coverage in many countries) are not the policyholders themselves but people suing the policyholders.

Total Balance Sheet approach

This concept is alluded to by several of the readings, but not always fully defined. The basic concept is that the amount of assets needed to cover the risks of an insurer is a function of the risks on both sides of the balance sheet and how those assets and liabilities are measured. Under this concept the capital requirement cannot be viewed in isolation of the accounting. A change in the accounting system should result in a change to the required capital requirement. For example, if the only assets were cash (i.e., completely risk-free) and the only risk was misestimation of liabilities, if the solvency requirement was to cover the risk of liabilities reaching 100, then a liability



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valuation of 70 under a conservative accounting system would require a capital requirement of 30. If those same liabilities were valued at 60 under a less conservative

system, then the capital requirement would be 40. Under such an approach the degree of risk margin, for example, is not a solvency concern as long as the capital requirement reacts to that risk margin appropriately¹.

As another example of the above concept, assume a balance sheet with risk in both assets and labilities. If the assets were valued conservatively under a given accounting system, then the capital requirement would be lower than it would if the assets were valued aggressively. The former approach (conservative valuation of assets) might result in some cushion for risk on the asset side of the balance sheet, offsetting the need for the amount of capital to be reported. Aggressive valuation of assets would lead to a higher requirement for reported capital.

Hedging

Hedging of financial market risks is fairly common for certain types of life/annuity contracts but is much less used for P&C contracts. One reason for this is that the payout for most P&C contracts is not a function of interest rates or equity markets, so there is less need to hedge those types of risks.

2. SPECIFIC READINGS

Reading: IAIS Core Curriculum 5 - Solvency - Principles and structures

(We acknowledge that there are a number of typos in the early pages of this reading. Please excuse these – we do not believe they are material to the usefulness of the material.)

¹ There may be other reasons to set a certain accounting approach to risk margins. Some accounting systems may desire to replicate the value a market would place on the liabilities if transferable, and market values generally reflect the risks of the items being transferred via risk margins. Some would want liability values to be set at a certain confidence level. Others might not want to include risk margins in liability valuations at all, due to estimation uncertainty, relying entirely on the capital requirement to cover the lack of margins.


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<u>On page 9 of this reading (Section 1.1.3)</u> there is a discussion of various perspectives regarding solvency. The middle bullets of this list (Inforce, "Break-up or winding-up") are generally focused on life/annuity products and/or may be focused on certain jurisdictions such that they are not totally relevant to many property/casualty (P&C) practitioners. Clarifying remarks for those bullets, as well as the "merger" bullet, are as follows:

- <u>Inforce</u> This bullet point is discussing the solvency option of "runoff", whereby an insurer stops writing new business as it runs off existing liabilities and obligations. While this may be limited to "in force" policies for a life insurance or annuity writer, the runoff obligations of a P&C insurer would include claim liabilities for in-force and expired policies. For certain products and jurisdictions, a majority of these runoff liabilities can come from expired policies. So, where this bullet point mentions "Inforce" please interpret that to mean "Runoff" including claim liabilities. As mentioned in the source material, such a runoff can be voluntary or can be a forced runoff at the direction of the supervisor.
- <u>Break-up or winding-up</u> A major component of this bullet point, and how it differs from the previous "runoff" bullet point, is via the transfer of existing obligations to another insurer. The candidate should be aware that this is much more common for life/annuity products than for P&C products and may actually be prohibited in some jurisdictions absent policyholder consent. While existing obligations may not be subject to transfer, a supervisor may be able to salvage value from a P&C insurer windup by the sale of customer lists or renewal rights from the failed insurer, or potentially even some limited product lines, especially if the product line at issue has been profitable in the past.
- <u>Merger</u> In some jurisdictions a supervisor may be able to force a merger of the failed insurer with a solvent insurer, but this is not always possible. The availability of this option is dependent on the local supervisor's authority. Not all jurisdictions give the supervisor such authority.

<u>Page 12 (section 1.4)</u> includes a list of risks faced by an insurer. That list in the text is "underwriting, credit, market, operational, and liquidity risk". The reader should be aware that underwriting risk here is meant to include both that related to premiums and that related to reserves. Premium risk includes the risks of mispricing (i.e., setting prices that do not reflect the expected costs), mis-underwriting (not selecting the types of risks anticipated in the pricing), and event risk (e.g., unusually bad whether under the policy period for property coverage). Event risk is higher when the exposures are



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concentrated in one particular area (such as one flood plain, one industry facing higher levels of lawsuits, etc.). Reserving risk is the risk that actual losses will be different from the reserve estimates. Reserving risk typically (but not always) remains until claims are closed and future claim reports (on prior events) are highly unlikely.

With regard to liquidity risk, much of the current thinking in the context of solvency regulation is that liquidity risk is not addressed via a capital requirement, but via more prudent management of potential cash sources versus cash demands. In other words, it is largely avoidable or subject to substantial mitigation via the investment strategy of an insurer.

Liquidity risk can be extremely high for a bank, and can also be material for a life insurer, but generally is much smaller for P&C insurers. The reason for this difference is the lack of a financial call feature on most P&C liabilities. Rather than being instantly callable on demand (as in a bank's checking account deposits), P&C claim liabilities are only paid after a covered event, and then only after an adjustment, negotiation, and settlement process. Ways of addressing liquidity risk are currently being investigated by the IAIS (as of early 2021).

"Matching" relative to P&C liabilities

Page 16 of the source material lists "Matching of assets and liabilities" as one of the essential elements of a solvency regime. The candidate should be aware that this is not exactly the case for most P&C products but was probably written with life/annuity products in mind. For many (most?) life insurance and annuity products the cash flows are highly predictable relative² to P&C products, and in some cases such products have financial call provisions³ or interest rate sensitivities. As a result, matching of asset flows closely to life/annuity liability flows can be very achievable and may be absolutely necessary for solvency purposes. But the cash flows for many P&C products are uncertain both as to amount and timing.

It is generally possible to match asset flows to expected P&C liability flows, but actual liability flows are almost certain to be different from those expectations, in some cases materially so. As those expected flows are subject to re-

 $^{^2}$ Both life insurance and annuity products have contractually defined (stated) payouts that require no negotiations. The payouts are also based on the subject individuals death or survival, with mortality trends generally very stable over time – at least from the perspective of P&C claim trends.

³ A financial call option in the insurance context allows the policyholder/claimant to demand immediate cash payment on the policy. In the context of life/annuity policies this relates to surrender provisions.



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estimation every reporting period (at a minimum due to actual to expected payout differences during the period), any attempt to match asset flows to those new expectations would require rebalancing the asset portfolio every reporting period, which can result in material transaction costs every reporting period. There also needs to be consideration of what happens when the liability flows.

for a period are much greater than expectations. A strict "matching" approach could require untimely liquidation of assets. Therefore, the focus for P&C companies are typically on asset/liability management, not asset/liability matching. For example, the asset portfolio may be managed such that the duration of such assets does not differ materially from the duration of the expected liability flows, as well as maintaining sufficient liquidity such that aberrations in cash flow demands from period to period do not require untimely asset sales. In short – asset/liability management is the approach taken by most P&C companies and not asset/liability matching.

There is a related issue in certain other readings in the syllabus (e.g., paragraph 6.103 of *A Global Framework for Solvency Assessment*) regarding "replicating portfolios". Replicating portfolios are portfolios of assets that mirror the reaction of the liabilities to certain stresses, such as an interest rate increase. Such portfolios are generally not relevant to P&C liabilities, where the principal risks are non-financial market risks such as weather, accidents, and court decisions. Instead, it is more common to hear mention of "reference portfolios" regarding P&C asset/liability management. Reference portfolios are asset portfolios with the same expected cash flows as the liabilities, but whose change in value due to an event does not necessarily mirror the change in liability value due to that event.

Solvency assessment vis-à-vis balance sheet

Section 2.2 (page 17) states that "Solvency is fundamentally an assessment of an insurer's current and, perhaps, prospective, balance sheet". For P&C insurers this is a little misleading in that many of the risks (such as weather for property insurers) arise from the income statement results and may never show up on the balance sheet other than reduced levels of assets or equity after the event. This is alluded to later in the first paragraph of this section in the discussion of "many exposures ... do not show up on the balance sheet".

Catastrophe risk

That same section mentions catastrophe risks as a source of solvency concern. The candidate should be aware that this is increasingly being addressed using catastrophe models (for both internal risk management and statutory minimum capital requirements). Third-party venders are already well-established for the hazards of



Exam 6 International Study Note – Solvency earthquake and tropical storms (hurricanes, cyclones, typhoons). Models have also been created for other hazards such as floods, terrorism, and hail.

Basic Reinsurance Accounting—Selected Topics

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

October 2012

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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 "<u>Reinsurance Principles and Practices</u>" 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. <u>Increase large line capacity</u>

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.

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- 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.

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Example 1				
XYZ Insurance Comp	any			
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 Balanc	es	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 Stat	istics			
Gross WP/Surplus		67%	93%	26%
Net WP/Surplus		67%	73%	6%
Gross Loss Reserves/	/Surplus	50%	75%	25%
Net Loss Reserves/Su	Irplus	50%	55%	5%
Ceded Reserves/Surp	olus	0%	30%	30%

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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. <u>Provide Catastrophe Protection</u>

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.

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Example 2	2						
ABC Insu	rance Company						
Impact of	Cat Treaty						
Balance S	Sheet	No Cat Eve	ent		Cat Event		
		Without	With	Difference	Without	With	Difference
<u>Assets</u>							
Bonds		2,575	2,525	(50)	2,480	2,430	(50)
Cash		75	75	-	120	120	-
Agents Ba	alances	100	100	-	100	100	-
Total		2,750	2,700	(50)	2,700	2,650	(50)
Liabilities							
Loss Rese	erves						
	Gross	750	750	-	1.200	1.200	-
	Ceded	0	0	_	0	400	400
	Net	750	750	-	1,200	800	(400)
Unearned	Premiums	500	500		500	500	
	Gross	500	500	-	500	500	-
	Ceded	0	0	-	0	0	-
<u> </u>	Net	500	500	-	500	500	-
	ents Balances	0	0	-	0	20	20
Iotal		1,250	1,250	-	1,700	1,320	(380)
<u>Surplus</u>		1,500	1,450	(50)	1,000	1,330	330
Income S	tatement						
Earned P	remium						
	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 L	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	-
Underwriti	ing Income	50	-	(50)	(450)	(120)	330
				(-)			(-)
Investmen	t Income	133	130	(3)	130	128	(3)
Total Inco	me	183	130	(53)	(320)	8	328
Written Pi	remiums						
	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 Fin	ancial Statistics						
Groce W/F		670/	600/		1000/	750/	050/
		67%	669%	2%	100%	70%	-25%
NEL VVP/S	landia	67%	66%	-1%	100%	70%	-30%
Gross Los	s Reserves/Surplu	50%	52%	2%	120%	90%	-30%
Net Loss I	Reserves/Surplus	50%	52%	2%	120%	60%	-60%
Ceded Re	serves/Surplus	0%	0%	በ%	በ%	30%	30%
		370	0,0	0,0	3,0	5570	5570

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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 balances¹ 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. <u>Stabilize loss experience</u>

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.

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- 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.

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Example 3							
DEF Insur	ance Compai	ny					
Impact of A	Aggregate Ex	cess Treaty					
Balance S	heet	Normal Los	ses		High Losse	es	
		Without	With	Difference	Without	With	Difference
<u>Assets</u>							
Bonds		2,575	2,475	(100)	2,480	2,380	(100)
Cash		75	75	-	120	120	-
Agents Ba	lances	100	100	-	100	100	-
Total		2,750	2,650	(100)	2,700	2,600	(100)
Liabilities							
Loss Rese	rves						
	Gross	750	750	-	1,200	1,200	-
	Ceded	0	0	-	0	225	225
	Net	750	750	-	1,200	975	(225)
	Durani						
Unearned	Premiums	500	500		500	E00	
	Gross	500	500	-	500	500	
		0	500	-	0	0	-
Codod Ag	Net Delenser	500	500	-	500	500	
Ceded Age	ents balances	1 250	1 250	-	1 700	1 475	-
Total		1,250	1,250	-	1,700	1,475	(225)
Surplue		1 500	1 400	(100)	1 000	1 1 2 5	125
<u>Surpius</u>		1,500	1,400	(100)	1,000	1,125	125
Income St	atement						
Farned Pr	emium						
Lamourr	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 I	OSSES	.,		(100)	.,		(100)
	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	-
Underwriti	na Income	50	(50)	(100)	(450)	(325)	125
	J		()	(/		(/	
Investment	Income	133	128	(5)	130	125	(5)
Total Incor	ne	183	78	(105)	(320)	(200)	120
				. ,		. ,	
Written Pr	emiums						
	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 Fina	ancial Statis	tics					
Gross WP	/Surplus	67%	71%	5%	100%	89%	-11%
Net WP/S	urplus	67%	68%	1%	100%	83%	-17%
-	_						
Gross Los	s Reserves/S	urplu 50%	54%	4%	120%	107%	-13%
Net Loss F	keserves/Surp	blus 50%	54%	4%	120%	87%	-33%
<u> </u>	(<u> </u>						
Ceded Res	serves/Surplu	is 0%	0%	0%	0%	20%	20%

Basic Reinsurance Accounting - Selected Topics

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Analysis of impact (from Example 3)

- Surplus The expected value of surplus is lower after buying reinsurance, but with less period-toperiod 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. <u>Provide surplus relief</u>

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.

Basic Reinsurance Accounting – Selected Topics

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Example 4	4			
XYZ Insu	rance Company			
Impact of	Quota Share Treaty			
Balance 3	Sheet	Without	With	Difference
Assets				
Bonds		1,575	943	(632)
Cash		75	75	-
Agents Ba	alances	100	100	-
Total		1,750	1,118	(632)
Liabilities	3			
Loss Res	erves			
	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 Ag	gents Balances	0	50	50
Total		1,250	675	(575)
<u>Surplus</u>		500	443	(57)
Income S	Statement			
Earned P	remium			
	Gross	1,000	1,000	-
	Ceded	0	500	500
	Net	1,000	500	(500)
Incurred I	Losses			
	Gross	750	750	-
	Ceded	0	375	375
	Net	750	375	(375)
Expenses		200	100	(100)
Underwrit	ing Income	50	25	(25)
Investmer	nt Income	83	51	(32)
Total Inco	me	133	76	(57)
Written P	remiums			
	Gross	1,000	1,000	-
	Ceded	0	500	500
	Net	1,000	500	(500)
Other Fir	nancial Statistics			
Gross WF	P/Surplus	200%	226%	26%
Net WP/S	Surplus	200%	113%	-87%
Gross Los	ss Reserves/Surplus	150%	169%	19%
Net Loss	Reserves/Surplus	150%	85%	-65%
Ceded Re	eserves/Surplus	0%	141%	141%

Basic Reinsurance Accounting - Selected Topics

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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.

Basic Reinsurance Accounting – Selected Topics

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Example	5				
XYZ Insu	rance Compar	ıy			
Impact of	Prospective F	Reinsurance Treat	/		
Balance	Sheet	Beginning	Ending	Ending	Difference
-		Balances:	Balances	Balances	
			Without:	With:	
<u>Assets</u>					
Bonds		2,575	1,908	1,690	(218)
Cash		75	19	19	-
Agents B	alances	100	-	-	-
Total		2,750	1,927	1,709	(218)
Liabilities	<u>S</u>				
Loss Res	erves				
	Gross	750	188	188	-
	Ceded	0	0	188	188
	Net	750	188	-	(188)
Unearneo	d Premiums				
	Gross	500	-	-	-
	Ceded	0	-	-	-
	Net	500	-	-	-
Ceded Ag	gents Balances	s 0	-	-	-
Total		1,250	188	-	(188)
Surplus		1,500	1,739	1,709	(30)
					. ,
Income S	Statement				
Earned P	Premium				
	Gross		500	500	-
	Ceded		0	500	500
	Net		500	-	(500)
Incurred	Losses				
	Gross		375	375	-
	Ceded		0	375	375
	Net		375	-	(375)
Expenses	S		-	(100)	(100)
Underwrit	ting Income		125	100	(25)
Investmer	nt Income		114	109	(5)
Total Inco	ome		239	209	(30)
					()
Written P	Premiums				
	Gross		-	-	-
	Ceded		-	-	-
	Net		-	-	-
Other Fi	nancial Statis	tics			
Gross W	P/Surplus		0%	0%	0%
Net WP/S	Surplus		0%	0%	0%
				0,0	
Gross Lo	ss Reserves/S	urplus	11%	11%	0%
Net Loss	Reserves/Surp	blus	11%	0%	-11%
Ceded Re	eserves/Surplu	S	0%	11%	11%

Basic Reinsurance Accounting – Selected Topics

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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. <u>Provide underwriting guidance</u>

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.

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Abstract

IFRS 17 Insurance Contracts establishes principles for the recognition, measurement, presentation and disclosure of insurance contracts within the scope of the standard. The objective of IFRS 17 is to ensure that an entity provides relevant information that faithfully represents those contracts. This information gives a basis for users of financial statements to assess the effect that insurance contracts have on the entity's financial position, financial performance and cash flows. In this paper, the authors provide a basic introduction to IFRS 17 with a focus on the key implications for property & casualty actuaries.

Keywords. insurance contracts, portfolio, group, cohort, General Measurement Model, Premium Allocation Approach, liability for remaining coverage, liability for incurred claims, risk adjustment.

1. OVERVIEW OF IFRS 17

1.1 What is IFRS 17?

IFRS 17 Insurance Contracts¹ is a new accounting standard developed by the International Accounting Standards Board (IASB) and published in May 2017 after two decades in the making, followed by a subsequent exposure draft in June 2019. The effective date of IFRS 17 is currently set for January 1, 2023.

The initial phase of the insurance accounting standard was IFRS 4 Insurance Contracts, which is being superseded by Phase II, called IFRS 17. IFRS 17 standardizes profit emergence and measurement of liabilities; theoretically, making capital markets for insurance companies more efficient. The stated goal of adopting an international financial reporting standard for insurance contracts was to improve comparability between insurance companies operating in different jurisdictions. This impacts the life insurance industry more than the P&C industry, which is already more standardized.

Insurance contracts are treated for accounting purposes as both a financial instrument and a service contract. In addition, insurance contracts can generate cash flows with substantial variability over a long period of time. To provide useful information about those contracts,

¹ Source: <u>https://www.ifrs.org/issued-standards/list-of-standards/ifrs-17-insurance-contracts/</u>

IFRS 17 aims to recognize profit over the insurance coverage period and to present insurance service results separately from investment income.

Under the key principles of IFRS 17, a company must:

- identify insurance contracts under which it accepts significant insurance risk from a policyholder by agreeing to compensate the policyholder if a specified uncertain future event adversely affects the policyholder;
- 2. divide the insurance contracts into groups that it will recognize and measure;
- 3. recognize and measure groups of insurance contracts at:
 - a. a risk-adjusted present value of the future cash flows (the "fulfilment cash flows") that incorporates all of the available information about the fulfilment cash flows in a way that is consistent with observable market information; plus
 - b. an amount representing what is described as the unearned profit in the group of contracts;
- 4. recognize the profit from a group of insurance contracts:
 - a. If a group of contracts is profitable, profits are recognized over the period the contracts provide coverage.
 - b. If a group of contracts is or becomes loss-making, losses are recognized immediately when the contracts are recognized;
- 5. present insurance revenue (e.g., premium), insurance service expenses (e.g., claims and loss adjustment expenses) and investment income separately in the financial statements; and
- 6. disclose information to enable users of the financial statements to assess the effect that contracts within the scope of IFRS 17 have on the financial position, financial performance and cash flows of the company.

IFRS 17 includes an optional simplified measurement approach, or premium allocation approach (PAA), for simpler insurance contracts, generally applicable to most non-life insurance contracts.

2. DEFINITIONS

The IFRS 17 standard defines several key terms that are referenced throughout the standard. The table below identifies the key terms relevant to this paper:

Contract Boundary	Cash flows are within the boundary of an insurance contract if they arise from substantive rights and obligations that exist during the reporting period in which the entity can compel the policyholder to pay the premiums or in which the entity has a substantive obligation to provide the policyholder with insurance contract services.
Cohorts of Insurance Contracts	Subdivisions of a group of insurance contracts based on date of issue (no more than 12 months apart).
Contractual Service Margin (CSM)	A component of the carrying amount of the asset or liability for a group of insurance contracts representing the unearned profit the entity will recognize as it provides insurance contract services under the insurance contracts in the group.
Coverage Period	The period during which an entity provides insurance contract services (namely insurance coverage for insured events).
Financial Risk	The risk of a possible future change in one or more of a specified interest rate, financial instrument price, commodity price, currency exchange rate, index of prices or rates, credit rating or credit index.
Fulfillment Cash Flow (FCF)	An explicit, unbiased and probability-weighted estimate (i.e., expected value) of the present value of the future cash outflows minus the present value of the future cash inflows that will arise as the entity fulfils insurance contracts, including a risk adjustment for non-financial risk.
Group of Insurance Contracts	 A set of insurance contracts resulting from the division of a portfolio of insurance contracts into, at a minimum, contracts issued no longer than one year apart and that, at initial recognition: a. are onerous, if any; b. have no significant possibility of becoming onerous subsequently, if any; or c. do not fall into either (a) or (b), if any.
Insurance Acquisition Cash Flows	Cash flows arising from the costs of selling, underwriting and starting a group of insurance contracts (issued or expected to be issued) that are

Insurance Contract	directly attributable to the portfolio of insurance contracts to which the group belongs. Such cash flows include cash flows that are not directly attributable to individual contracts or groups of insurance contracts within the portfolio. 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
Insurance Risk	Risk, other than financial risk, transferred from the policyholder of an insurance contract to the issuer.
Insured Event	An uncertain future event covered by an insurance contract that creates insurance risk
Liability for Incurred Claims (LIC)	 An entity's obligation to: (a) investigate and pay valid claims for insured events that have already occurred, including events that have occurred but for which claims have not been reported, and other incurred insurance expenses; and (b) pay amounts that are not included in (a) and that relate to: i. insurance contract services that have already been provided; or ii. any investment components or other amounts that are not related to the provision of insurance contract services and that are not in the liability for remaining coverage. This is similar to the loss reserves, unpaid claims or claim liabilities under other accounting systems.
Liability for Remaining	An entity's obligation to:
-coverage (LKC)	 (a) investigate and pay valid claims under existing insurance contracts for insured events that have not yet occurred (i.e., the obligation that relates to the unexpired portion of the insurance coverage); and (b) pay amounts under existing insurance contracts that are not included in (a) and that relate to: i. insurance contract services not yet provided (ie the obligations that relate to future provision of insurance contract services); or ii. any investment components or other amounts that are not related to the provision of insurance contract services and that have not

	been transferred to the liability for incurred claims.
	This is similar to the unearned premium reserve or premium liability under other accounting systems.
Policyholder	A party that has a right to compensation under an insurance contract if an insured event occurs.
Portfolio of Insurance Contracts	Highest level grouping of insurance contracts subject to similar risks and that are deemed to be managed together.
Reinsurance Contracts	An insurance contract issued by one entity (the reinsurer) to compensate another entity (the insurer) for claims arising from one or more insurance contracts issued by that other entity (underlying contracts). The contract is classified as reinsurance held by the insurer, and reinsurance written by the reinsurer.
Risk Adjustment for Non-Financial Risk	The compensation an entity requires for bearing the uncertainty about the amount and timing of the cash flows that arises from non-financial risk as the entity fulfils insurance contracts.

3. SCOPE

3.1 Scope

IFRS 17 applies to all insurance and reinsurance contracts, no matter if they are issued by an insurer or another type of company or entity. Nonetheless, some specific types of contracts are excluded from the scope of IFRS 17. The list of excluded contract types includes, amongst others²:

- warranties provided by a manufacturer, dealer, or retailer in connection with the sale of goods or services to a customer (but not excluding other types of warranties);
- benefit plans and retirement benefits, such as group insurance plans or defined benefits retirement plans, offered by employers to their employees; and
- insurance contracts where the entity is the policyholder, unless those contracts are reinsurance contracts held.

² The complete list of contract types excluded from IFRS 17 includes:

- i. warranties provided by a manufacturer, dealer or retailer in connection with the sale of its goods or services to a customer;
- ii. employers' assets and liabilities from employee benefit plans and retirement benefit obligations;
- iii. contractual rights or contractual obligations contingent on the future use of, or the right to use, a nonfinancial item (for example, some license fees, royalties, variable and other contingent lease payments and similar items);
- iv. residual value guarantees provided by a manufacturer, dealer or retailer and a lessee's residual value guarantees when they are embedded in a lease;
- v. financial guarantee contracts, unless the issuer has previously asserted explicitly that it regards such contracts as insurance contracts and has used accounting applicable to insurance contracts;
- vi. contingent consideration payable or receivable in a business combination;
- vii. insurance contracts in which the entity is the policyholder, unless those contracts are reinsurance contracts held; or
- viii. contingent consideration payable or receivable in a business combination;
- ix. insurance contracts in which the entity is the policyholder, unless those contracts are reinsurance contracts held; or
- x. credit card contracts, or similar contracts that provide credit or payment arrangements, that meet the definition of an insurance contract if, and only if, the entity does not reflect an assessment of the insurance risk associated with an individual customer in setting the price of the contract with that customer.

Some contracts meet the definition of an insurance contract but have as their primary purpose the provision of services for a fixed fee. An entity may choose to apply IFRS 15 instead of IFRS 17 to such contracts that it issues if, and only if, specified conditions are met. The entity may make that choice contract by contract, but the choice for each contract is irrevocable. Examples of such contracts might include roadside assistance contracts (that cover tow truck and other assistance to the insured's disabled vehicle) and an appliance service contract sold by someone other than the manufacturer or dealer.

3.2 Separating Components of an Insurance Contract

Insurance contracts may contain one or more components that would be within the scope of another standard if they were separate contracts. For example, an insurance contract may include an investment component or a component for services other than insurance contract services (or both). In those situations, IFRS 17 requires the measurement and reporting of those distinct components³ separately, under their respective standards as appropriate.

³ IFRS 17 does not apply to distinct service components, distinct embedded derivatives and distinct investment components.

4. LEVEL OF AGGREGATION OF INSURANCE CONTRACTS

4.1 Overview

Under IFRS 17, entities are required to aggregate insurance and reinsurance contracts in mutually exclusive units. The groupings must be performed at different levels, as illustrated below and further expanded on in the illustrative example in the Appendix:



The units and different aggregation level are then used for reporting and measurement at a prescribed level. Portfolios, groups or cohorts could include as few as one insurance contract if that is the result of applying the aggregation requirements of IFRS 17. There is no guidance on the maximum number of insurance contracts in a portfolio, group or cohort. Insurance contracts are assigned a portfolio, group and cohort at initial recognition and are not reassigned at subsequent measurements.

4.2 Portfolios

Entities must identify portfolios of insurance contracts. A portfolio comprises contracts covering similar risks deemed to be managed together. Contracts within a product line would be expected to have similar risks and hence would be expected to be in the same portfolio if they are managed together. Contracts in different product lines would not be expected to have similar risks and hence would be in different portfolios. How this concept is implemented would depend on the particular facts and circumstances of the entity implementing IFRS 17.

IFRS 17 does not define what is meant by "managed together," but it is a general consensus that entities should rely on the facts and circumstances of its operations to evaluate the "managed together" criteria. Potential facts and circumstances that can be looked at to evaluate the criteria include, but are not limited to: financial planning, marketing and sales, underwriting, pricing, internal reporting, product development, claims management, portfolio management, expense allocation, governance framework, risk management including reinsurance. For example, automobile insurance contracts and homeowner insurance contracts for many insurers would probably not be combined within the same portfolio since they cover different risks, although they might be for an insurer that combines these products in a package or that is predominately involved with other products (with common management and risk analysis for a relatively small personal lines operation).

As reinsurance contracts can provide coverage to underlying policies covering different risks, the level of aggregation for reinsurance contracts must be assessed independently of the direct contracts. There are various options for assigning reinsurance contracts to portfolios including by predominant exposure covered, by creating a portfolio of treaties that cover multiple risks, or by individual reinsurance contract. Separating the reinsurance contracts into sub-contracts and assigning the sub-contracts to different groups and portfolios may be acceptable but only if the insurer can prove that a single treaty was issued solely for convenience and the price is simply the aggregate of the standalone prices.

4.3 Groups

Entities must further divide portfolios into different groups based on whether they are onerous. Groups of contracts must be tested for onerousness at initial recognition. An insurance contract is onerous at the date of initial recognition if the fulfilment cash flows allocated to the contract, any previously recognized acquisition cash flows and any cash flows arising from the contract at the date of initial recognition in total are a net outflow.

At initial recognition, contracts are classified in one of three possible groups:

- 1. Onerous at initial recognition (i.e., expected to be unprofitable)
- 2. No significant possibility of becoming onerous (i.e., very profitable)
- 3. Remaining contracts (i.e., expected to be profitable)

If contracts within a portfolio fall into different groups only because law or regulation

specifically constrains the entity's practical ability to set a different price or level of benefits for policyholders with different characteristics (e.g., inability to use credit score in the pricing of auto insurance), the entity may include these contracts in the same group.

4.4 Cohorts

Insurance contracts issued more than one year apart cannot be in the same group. To achieve this, an entity must further divide the groups, by year issued for example, into cohorts.

5. GENERAL MEASUREMENT MODEL

The measurement of an insurance contract under the General Measurement Model (GMM) can be visualized with the aid of the following diagram that represents measurement under the GMM for one insurance contract.



The diagram assumes that premium is collected upfront, that acquisition costs are paid at inception and that there are no changes to the valuation assumptions. This is a simplified illustration of an insurance contract for the purposes of this paper and does not fully account for all aspects and complexities within the liability calculation.

On initial recognition under the GMM, an entity must measure a group of insurance contracts at the total of:

- 1. The fulfilment cash flows, which comprise of:
 - a. Estimates of future cash flows;
 - b. An adjustment to reflect the time value of money and the financial risks related to the future cash flows; and
 - c. A risk adjustment for non-financial risk.
- 2. The contractual service margin (explained below), whose purpose is to prevent recognition of earnings before any service is provided (otherwise known as "gain at issue").

This initial value is a liability for remaining coverage. On each subsequent measurement (i.e., vertical cross-section of the diagram), the carrying amount of a group of insurance contracts is the sum of:

- 1. The liability for remaining coverage or "LRC" (orange in the diagram above), which comprise of:
 - a. The fulfilment cash flows related to **future** services allocated to the group at that date; and
 - b. The contractual service margin of the group at that date.
- 2. The liability for incurred claims or "LIC" (blue in the diagram above), which comprise of:
 - a. The fulfilment cash flows related to **past** services allocated to the group at that date.

5.1 Estimates of Future Cash Flows

An entity must include in the measurement of a group of insurance contracts all the future cash flows within the boundary of each contract in the group. The estimates of future cash flows shall:

- 1. Incorporate all information available without undue cost or effort about the amount, timing and uncertainty of those future cash flows;
- 2. Reflect the perspective of the entity, provided that the estimates of any relevant market variables are consistent with observable market prices for those variables;
- 3. Be current—the estimates must reflect conditions existing at the measurement date, including assumptions at that date about the future; and
- 4. Be explicit—the entity must estimate (a) the future cash flows, (b) the time value and financial risk adjustment and (c) the risk adjustment for non-financial risk separately.

These future cash flows include (where applicable), but are not limited to: premiums, payments to policyholders and claimants, payments on future claims on unexpired risks, an allocation of acquisition costs, claims handling costs, and policy administration and maintenance costs.

Acquisition costs, unlike most other fulfilment cash flows, are typically paid before or at policy inception. IFRS 17 allows for the deferral of acquisition costs and the associated revenue to smooth out the recognition of profits. Paid acquisition costs are an asset that is amortized (or derecognized) when they are included in the measurement of the related group of insurance contracts.

IFRS 17 explicitly states that to comply with (1) above, an entity shall produce an estimate of the expected value (i.e., the probability-weighted mean) for the full range of possible future cash flow outcomes. Several deterministic methods (Chain-Ladder, Expected Losses, etc.) used to estimate the future cash flow of insurance products already produce an estimate of the expected value for those future cash flows. As such, current methods remain relevant under IFRS 17.

5.2 Adjustment to Reflect Time Value of Money and Financial Risks

Under IFRS 17, both LRC and LIC must include an adjustment for the time value of money and financial risk⁴. The discount rate applied to the future cash flow to account for the time value of money must:

- 1. reflect the time value of money, the characteristics of the cash flows and the liquidity characteristics of the insurance contracts;
- 2. be consistent with observable current market prices (if any) for financial instruments with cash flows whose characteristics are consistent with those of the insurance contracts, in terms of, for example, timing, currency and liquidity; and
- 3. exclude the effect of factors that influence such observable market prices but do not affect the future cash flows of the insurance contracts.

Under IFRS 17, discount rates for cash flows do not vary with the return on assets that a company holds to support its LRC and LIC.

Two possible approaches can be used to derive a discount rate under IFRS 17:

• Bottom-up approach: an illiquidity premium⁵ is added to a risk-free yield curve to

⁴ To the extent that the financial risks are not included in the estimates of cash flows

⁵ An illiquidity premium is an additional return demanded by an investor when an investment cannot be easily and efficiently sold for its fair market value.

reflect the liquidity characteristics of the underlying insurance contract liabilities. Different approaches can be considered to select a liquid risk-free yield curve and an appropriate discount rate (government bond rates, swap curves, corporate bond rates, expert judgement)

• **Top-down approach**: a reference portfolio of assets with characteristics similar to those of the insurance contract liabilities is selected. The yield of the reference portfolio is then adjusted downward to remove any characteristics of the assets that are not consistent with the insurance contract liabilities, such as credit risk and market risk.

Property/casualty claim liabilities in most cases are considered to be illiquid, as they cannot be called (forced to be paid "on-demand" outside the normal settlement process). Property/casualty premium liabilities may be considered to be illiquid or liquid to some degree depending on cancelation provisions and other considerations (that may vary materially by contract and by jurisdiction).

5.3 Risk Adjustment for Non-Financial Risks

An entity shall adjust the estimate of the present value of the 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. We note that, contrary to the estimates of future cash flows and time value of money and financial risk, the risk adjustment for non-financial risk is entity-specific whereas the former would be entity-agnostic in theory.

The risk adjustment for non-financial risk for insurance contracts measures the compensation that the entity would require to make the entity indifferent between:

- a) fulfilling a liability that has a range of possible outcomes arising from non-financial risk; and,
- b) fulfilling a liability that will generate fixed cash flows with the same expected present value as the insurance contracts.

Because the risk adjustment for non-financial risk reflects the compensation the entity would require for bearing the non-financial risk arising from the uncertain amount and timing of the cash flows, the risk adjustment for non-financial risk also reflects:

a) the degree of diversification benefit the entity includes when determining the

compensation it requires for bearing that risk; and

b) both favorable and unfavorable outcomes, in a way that reflects the entity's degree of risk aversion.

IFRS 17 does not specify the estimation technique(s) used to determine the risk adjustment for non-financial risk. However, to reflect the compensation the entity would require for bearing the non-financial risk, the risk adjustment shall have the following characteristics:

- a) risks with low frequency and high severity will result in higher risk adjustments than risks with high frequency and low severity;
- b) for similar risks, contracts with a longer duration will result in higher risk adjustments than contracts with a shorter duration;
- c) risks with a wider probability distribution will result in higher risk adjustments than risks with a narrower distribution;
- d) the less that is known about the current estimate and its trend, the higher will be the risk adjustment; and
- e) to the extent that emerging experience reduces uncertainty about the amount and timing of cash flows, risk adjustments for non-financial risk will decrease and vice versa.

Methods to consider include stochastic modeling and cost of capital approaches. No matter the technique used to derive the risk adjustment for non-financial risk, an entity must disclose the confidence level corresponding to the results of the selected technique, with the goal to help readers of the financial statements to understand and compare different companies.

5.4 Contractual Service Margin

The contractual service margin is a component of the asset or liability for the group of insurance contracts under the LRC for the GMM that represents the unearned profit the entity will recognize as it provides insurance contract services in the future. Once the coverage period has ended, the CSM falls to zero.

It is measured at initial recognition as the excess (if any) of the expected present value of cash inflows over cash outflows after adjustment for non-financial risk to eliminate any "gain at issue." It is amortized over the coverage period for the group based on "coverage units,"

which aim to measure the quantity of coverage provided over a given period of time. For example, a straight-line allocation of coverage units over the passage of time may be appropriate for some insurance products.

At inception, before any cash flows, the CSM is estimated as:

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Initial CSM
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= Premium Receivable - Expected Claims Payable - Expected Expenses Payable - Risk Adjustment
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At subsequent measurement, assuming no changes in assumptions, the CSM is estimated as: $CSM = Initial CSM \cdot (1 - Earned Coverage Units / Total Coverage Units)$

At both inception and subsequent measurement, the CSM has a floor of zero.

5.5 Onerous Contracts and Loss Component

If there is no excess of inflows over outflows at inception (i.e., the CSM is zero), the contract is onerous and a loss component is calculated. As discussed above, onerous contracts must be grouped separately from non-onerous contracts.

An entity must recognize a loss for the net present value outflow for the group of onerous contracts, resulting in the carrying amount of the liability for the group being equal to the fulfilment cash flows of the group.

A group of insurance contracts becomes onerous (or more onerous) on subsequent measurement if unfavorable changes to the estimates of future cash flows and the risk adjustment for non-financial risk exceed the carrying amount of the contractual service margin. The loss component decreases proportionally to the LRC and reaches 0 once the coverage for the underlying insurance contracts expires. A group can also become non-onerous with a positive CSM if in the future the present value of future cash flows decreases sufficiently.

6. VARIATIONS TO THE GENERAL MEASUREMENT MODEL

6.1 Premium Allocation Approach

Under IFRS 17, the LRC of insurance contracts that satisfy certain criteria can be measured using a simplified approach called the Premium Allocation Approach (PAA). This is particularly relevant for non-life products since a large portion of them meet the criteria for the PAA. Note that the PAA does not impact the measurement of the LIC.

An entity may simplify the measurement of a group of insurance contracts by using the premium allocation approach if, and only if, at the inception of the group:

- a) the entity reasonably expects that such simplification would produce a measurement of the LRC for the group that would not differ materially from the one that would be produced by applying the GMM; or
- b) the coverage period of each contract in the group is one year or less.

For contracts not immediately eligible for the PAA under (b) above, the potential eligibility for the PAA has to be tested to see if it meets the criteria under (a) above. This requires understanding the mechanics of both the PAA and GMM for the type(s) of contracts being tested, including how the CSM is measured over the life on a contract under the GMM. Many contracts over 12 months long have been found to be eligible for the PAA, but the longer the contract the less likely that they will be eligible for the PAA.



The measurement of a single insurance contract under the PAA can be visualized with the aid of the following diagram:

The diagram assumes that premium is collected upfront, that acquisition costs are paid at inception and that there are no changes to the valuation assumptions. This is a simplified illustration of an insurance contract for the purposes of this paper and does not fully account for all aspects and complexities within the liability calculation.

If an entity elects to use the PAA instead of the GMM for a group of insurance contracts, it shall measure the LRC as follows:

On initial recognition, the carrying amount of the LRC is composed of:

- a) the premiums received at initial recognition, if any;
- b) minus any insurance acquisition cash flows at that date, unless the entity chooses to recognize the payments as an expense; and
- c) plus or minus any amount arising from the derecognition at that date of any asset for insurance acquisition cash flows and any other asset or liability previously recognized for cash flows related to the group of contracts.

At each subsequent reporting period, the carrying amount of the LRC is composed of:

- a) the carrying amount of the LRC at the start of the period
- b) plus the premiums received in the period;
- c) minus insurance acquisition cash flows; unless the entity chooses to recognize the payments as an expense applying;
- d) plus any amounts relating to the amortization of insurance acquisition cash flows recognized as an expense in the reporting period; unless the entity chooses to recognize insurance acquisition cash flows as an expense;
- e) minus the amount recognized as insurance service revenue in that period (which would primarily be composed of premium earned in the period).

Under PAA, the entity assumes that contracts are not onerous at initial recognition unless facts and circumstances indicate otherwise. However, if at any time during the coverage period, facts and circumstances indicate that a group of insurance contracts is onerous, an entity shall calculate the difference between the current LRC under the PAA and the fulfilment cash flows that relate to the remaining coverage of the group under the GMM. To the extent that the fulfilment cash flows exceed the current LRC under the PAA, the entity shall recognize a loss
and increase the LRC.

An entity that elects to use the PAA may choose to recognize any insurance acquisition cash flows as expenses when it incurs those costs, provided that the coverage period of each contract in the group at initial recognition is no more than one year. Under the GMM, acquisition cash flows must be deferred over the coverage period of the contract.

An entity shall measure the liability for incurred claims for the group of insurance contracts as the fulfilment cash flows relating to incurred claims, the same as under the GMM. However, the entity is not required to adjust future cash flows for the time value of money and the effect of financial risk if those cash flows are expected to be paid or received in one year or less from the date the claims are incurred.

6.2 Reinsurance Held

Similarly to insurance contracts, an entity shall divide portfolios of reinsurance contracts held into portfolios, groups and cohorts, except that the references to onerous contracts are replaced with references to contracts on which there is a net gain on initial recognition (i.e., profitable from the cedant's perspective).

An entity shall recognize a group of reinsurance contracts held from the earlier of the following:

- a) the beginning of the coverage period of the group of reinsurance contracts held; and
- b) the date the entity recognizes an onerous group of underlying insurance contracts, if the entity entered into the related reinsurance contract held in the group of reinsurance contracts held at or before that date⁶.

In applying the measurement requirements, the entity shall use consistent assumptions to measure the estimates of the present value of the future cash flows for the group of reinsurance contracts held and the estimates of the present value of the future cash flows for the group(s) of underlying insurance contracts. In addition, the entity shall include in the estimates of the present value of the future cash flows for the group of reinsurance contracts held the effect of any risk of non-performance by the issuer of the reinsurance contract, including the effects

⁶ A loss recovery needs to be recorded at the same time as a loss component is reported for the underlying contracts, if the insurer expects to recover on the underlying contracts.

An Introduction to IFRS 17 for P&C Actuaries

of collateral and losses from disputes. An entity shall determine the risk adjustment for nonfinancial risk so that it represents the amount of risk being transferred by the holder of the group of reinsurance contracts to the issuer of those contracts.

An entity may use the premium allocation approach to simplify the measurement of a group of reinsurance contracts held, if at the inception of the group:

- a) the entity reasonably expects the resulting measurement would not differ materially from the GMM; or
- b) the coverage period of each contract in the group of reinsurance contracts held (including insurance coverage from all premiums within the contract boundary determined at that date) is one year or less.

7. RECOGNITION, MODIFICATION AND DERECOGNITION

7.1 Recognition

Insurance contracts must be recognized at the earliest of the following:

- 1. The beginning of the coverage period of the group of contracts;
- 2. The date when the first payment from a policyholder in the group becomes due; or,
- 3. For a group of onerous contracts, when the group becomes onerous.

For example, if a portion of the premium is due before the effective date of the policy, the insurance contracts would be recognized on the date the premium is due. The premium due date would then be used to separate the groups of insurance contracts into yearly cohorts. If there is no contractual due date, the first payment from the policyholder is deemed to be due when it is received.

7.2 Modification

If the terms of an insurance contract are modified, for example by agreement between the parties to the contract or by a change in regulation, an entity must derecognize the original contract and recognize the modified contract as a new insurance contract if and only if one of the following conditions is satisfied:

- 1. If the modified terms had been included at contract inception:
 - a. The modified contract would have been excluded from the scope of IFRS 17,
 - b. An entity would have separated different components (distinct service components, distinct embedded derivatives, distinct investment components) from the insurance contract to which IFRS 17 would have applied,
 - c. The modified contract would have had a substantially different contract boundary, or,
 - d. The modified contract would have been included in a different group of contracts.

An Introduction to IFRS 17 for P&C Actuaries

- 2. The original contract met the definition of an insurance contract with direct participation features, but the modified contract no longer meets that definition, or vice versa; or
- 3. The entity applied the premium allocation approach to the original contract, but the modifications mean that the contract no longer meets the eligibility criteria for this simplified approach.

If a contract modification meets none of the conditions above, the entity shall treat changes in cash flows caused by the modification as a change in the estimate of fulfilment cash flows. The exercise of a right included in the terms of a contract is not a modification.

Examples of common modifications that might exist for property/casualty contracts include adding a car to a personal automobile/motor policy, replacing an old car with a new car for such a policy, or adding a property to the commercial property policy for a large business. In many cases these would not lead to derecognition of the prior policy.

7.3 Derecognition

An entity shall derecognize an insurance contract when, and only when:

- 1. it is extinguished, i.e., when the obligation specified in the insurance contract expires or is discharged or cancelled; or
- 2. any of the conditions for modifications leading to derecognition are met.

When an insurance contract is extinguished, the entity is no longer at risk and is therefore no longer required to transfer any economic resources to satisfy the insurance contract. It is important to note that since P&C insurance contracts are rarely extinguished, derecognition rarely applies to P&C insurance contracts.

An entity derecognizes an insurance contract from within a group of contracts by applying the following requirements in IFRS 17:

- the fulfilment cash flows allocated to the group are adjusted to eliminate the present value of the future cash flows and risk adjustment for non-financial risk relating to the rights and obligations that have been derecognized from the group; and,
- 2. the contractual service margin of the group is adjusted for the change in fulfilment cash flows.

8. PRESENTATION AND DISCLOSURE

Below are examples of a simplified statement of profit or loss and a statement of financial position for an insurance company reporting under IFRS 17.

	2023	2024
Insurance revenue	50,890	54,269
Insurance service expenses	(42,459)	(43,104)
Net expenses from reinsurance contracts	(1,125)	(1,230)
Insurance service result	7,306	9,935
Net investment income	23,800	29,169
Net finance expense from insurance contracts	(20,160)	(24,166)
Net finance income from reinsurance contracts	279	337
Net insurance finance expenses	(19,881)	(23,829)
Net insurance and investment result	11,225	15,275
Other income	(5,500)	(5,536)
Profit before income tax	5,725	9,739
Income tax expenses	(1,603)	(2,644)
Profit for the year	4,122	7,095

Consolidated Statement of Profit or Loss

Consolidated Statement of Financial Position

	2023	2024
Assets		
Cash	16,337	16,899
Financial investments	392,821	421,291
Receivables	8,470	7,609
Insurance contract assets	668	717
Reinsurance contract assets	12,375	13,775
Other assets	1,501	1,561
Total assets	432,172	461,852
Liabilities		
Payables	11,305	10,401
Insurance contract liabilities	360,829	379,951
Reinsurance contract liabilities	834	884
Other liabilities	612	652
Total Liabilities	373,580	391,888
Equity		
Share capital and share premium	19,014	23,291
Retained earnings	39,578	46,673
Total equity	58,592	69,964
Total liabilities and equity	432,172	461,852

An Introduction to IFRS 17 for P&C Actuaries

Insurance service revenue should primarily be composed of the amount of premium earned in the period. Insurance service expenses should contain incurred claims, acquisition costs and costs required to fulfill insurance contracts under PAA and GMM. Net expenses from reinsurance contracts can either be shown as a single line item netting premium and expense, or by showing separate reinsurance premium and reinsurance service expenses. It is important to note that reinsurance premium is often shown net of ceding commission for both reinsurance assumed and reinsurance ceded which may distort historical key performance indicators.

Insurance finance income / expense captures the unwind of the discount and other financial risk related insurance measurements. LRC and LIC are included in insurance and reinsurance contracts assets and liabilities.

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APPENDICES

Differences between IFRS 4 and IFRS 17

IFRS applies to any contract classified as insurance contracts, regardless of the issuing company. Contract classification under IFRS 17 is largely the same as IFRS 4.

IFRS 17 maintains the presentation and disclosure themes of IFRS 4 but reduces the number of line items in the P&L and balance sheet, while expanding detailed disclosure requirements. The new standard introduces new measurement requirements for insurance contracts. IFRS 4 did not contain measurement requirements and deferred to local accounting practices.

This in turn impacts how actuaries must project future insurance cash flows, determine risk margins and estimate liabilities with regards to expired, inforce and future insurance policies.

Illustrative Example – Portfolio aggregation, LRC and LIC under PAA

To assist the reader in understanding the concepts of IFRS 17, the authors have provided an illustrative example in appendix, and as an Excel workbook, that covers topics from the following sections of the paper:

- 4. Level of Aggregation of Insurance Contracts
- 5. General Measurement Model
- 6. Variations to the General Measurement Model
- 8. Presentation and Disclosure

In some cases, the derivation of assumptions underlying IFRS 17 calculations is not trivial and requires extensive amounts of data and actuarial analysis. For the purposes of this paper, the authors have simplified the example to focus on the core mechanics of the IFRS 17 calculations. The list of simplified assumptions include expected loss ratios, unpaid claims, present value factors, and risk adjustment factors. Should the reader wish to dive deeper into the technical approaches used to derive these assumptions, the authors would refer them to other published papers on these topics. See discussions, stats, and author profiles for this publication at: https://www.researchgate.net/publication/259555647

The Development and Regulation of China's Insurance Market: History and Perspectives

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Some of the authors of this publication are also working on these related projects:



Consumer Policy View project

Risk Management and Insurance Review

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PERSPECTIVES

THE DEVELOPMENT AND REGULATION OF CHINA'S INSURANCE MARKET: HISTORY AND PERSPECTIVES

Bingzheng Chen Sharon Tennyson Maoqi Wang Haizhen Zhou

ABSTRACT

China's private insurance market has been developing rapidly since the 1980s. Regulation of the market has developed in tandem with its growth. This article provides a systematic overview of China's insurance regulatory system and the evolving process of insurance supervision and regulation. The nature and direction of regulatory changes are evaluated in light of theories of public reform and the special character of China among developing economies.

INTRODUCTION

Although China's modern commercial insurance market has a history of over 200 years, due to the socialist planned economy the domestic insurance industry was effectively closed from 1958 through 1979. On November 19, 1979, the People's Bank of China held the National Insurance Working Conference in Beijing and made the decision to reestablish the domestic insurance business. From 1980 onward, China's insurance industry has developed rapidly, becoming one of the fastest growing industries in the economic system and one whose importance continues to rise. Nominal premium income has grown at an average rate of over 30 percent per year, and China's insurance market now ranks as the sixth largest in the world.¹

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¹ Insurance premium growth calculated from *China's Insurance Yearbook*. The ranking of China's insurance market is measured by total premiums in U.S. dollars obtained from SwissRe Sigma (2012.02). That report ranked China sixth in the world, after the United States, Japan, Great Britain, France, and Germany, in 2011.

Concomitant with the development of the private insurance industry, China had to develop a modern insurance regulatory system. In 1995, the promulgation of the Insurance Law of People's Republic of China (the Insurance Law) marked a critical step in the standardization of China's insurance regulation. To implement the Insurance Law, the People's Bank of China established an Insurance Division responsible for the supervision of domestic insurance companies. In 1998, insurance regulation was separated from banking and securities regulation through establishment of the China Insurance Regulatory Commission (CIRC). This marked the beginning of a comprehensive insurance regulatory system in the country.

This insurance regulatory system is still young and evolving. As the insurance market has matured, new regulatory issues have emerged and created the need for regulatory changes. Prior to 1995, the regulatory emphasis was on market behavior, with solvency supervision receiving little emphasis. With China's entry into the World Trade Organization (WTO) and the opening of the insurance market to foreign capital in 2000, solvency regulation began to be the core focus of regulatory oversight. The modification of the Insurance Law in 2009 strengthened information disclosures, standardized contracts and procedures, and expanded the rights of consumers in order to increase the transparency of insurance transactions and enhance market functioning.

Regulatory philosophy has evolved as well. Until recently, the role of China's insurance regulators was seen to be primarily the promotion and development of the domestic insurance industry. As problems associated with the rapid development of insurance markets have become apparent, regulatory focus has changed to that of creating a fair and orderly market environment. This change is evidenced by the remarks of Mr. Wu Dingfu—the chairman of the CIRC—in 2010, who stated that "the regulators used to be the coaches of the industry, who are concerned with building the market; but in the new era, insurance regulators should act more like judges, whose efforts should change from market construction to market supervision."² In keeping with this evolution, the 2009 modification to the Insurance Law and recent department rules issued by the CIRC focus on improving supervision of both solvency and market conduct. Increasingly, it is recognized that prudential supervision and consumer protections work together to maintain confidence in insurance markets and to promote the healthy development of the industry.

This article provides an account of China's insurance market development, with special emphasis on developments in insurance law, regulation, and supervision over the past decade. The current insurance market situation and problems are discussed, and the outlook for market development and regulation in China is also considered. The next section of the article describes the development of China's insurance market, and following that "China's Insurance Regulatory System" describes China's insurance regulatory system. The evolution of insurance regulation in recent years is discussed in the section "Evolution of Insurance Regulation and Supervision," and the final section provides the authors' perspectives on insurance regulation in China.

² An interview of Mr. Wu Dingfu, Chairman of the CIRC. "China Finance," 2010.06.

CHINA'S INSURANCE MARKET³

Market Size and Development

The private insurance market in China encompasses life insurance and property–liability insurance, with private health insurance and short-term casualty insurance counted among the life insurance sector. Initially, the private market was dominated by property insurance for business enterprises (Sun et al., 2007). Over time, life insurance markets have developed, and by 2010 the life insurance market was nearly three times as large as the property insurance market. Auto insurance contributed 77.12 percent of the total property–liability insurance premiums in 2010. In the life insurance market, participating life insurance is the most popular, contributing over 80 percent of premiums in 2010. Private health insurance is a relatively small portion of the insurance market, contributing only about 5 percent of life insurance premiums.⁴

The Chinese government also provides a range of social insurance protections that are separate from the private insurance market. Social insurance consists of five parts: *Basic Old-Age Insurance, Basic Medical Insurance, Occupational Injury Insurance, Unemployment Insurance*, and *Maternity Insurance*. These social insurance programs are considered an important part of employees' compensation and provide basic protections for the Chinese people.⁵ Social insurance covers a broad spectrum of the population, reaching over 1.1 billion people in 2010. The income of the social insurance fund in 2010 was 1.88 trillion yuan, and compensation paid out was 1.48 trillion yuan.⁶

In comparison, the private insurance sector was initially much smaller but by 2010 was similar in size to the social insurance sector. Figure 1 displays annual premium revenue of the insurance industry from 1980 to 2010, along with annual insurance premium growth rates and GDP growth rates over the same period. As displayed in the figure, nominal insurance premiums increased from 460 million yuan in 1980 to 1.45 trillion yuan in 2010, an average annual premium growth rate of over 30 percent, compared to a nominal GDP growth rate of 16 percent.

Measures of insurance market maturity have grown along with the rapid growth in the market. As depicted in Figure 2, China's insurance density, measured as insurance premiums per capita, rose from less than 1 yuan in 1980 to over 1,000 yuan (\$158.50 in U.S. dollars) in 2010. Insurance penetration, measured as premiums relative to GDP, increased from 0.1 percent in 1980 to 3.65 percent in 2010.

Nonetheless, China's insurance market is far from mature when compared to other countries. China's insurance penetration and insurance density relative to other world

³ We provide only a brief overview of China's insurance market development for background purposes; see Sun et al. (2007) for a more detailed discussion of the development and structure of the insurance industry.

⁴ Data are from *China's Insurance Yearbook* 2011.

⁵ There is also a Public Reserve Fund for Housing. The five components of the social insurance program and the housing reserve fund are together described as the "Five Insurances and One Fund" and constitute the social safety net provided to workers.

⁶ Data on social insurance are from the Statistical Bulletin of human resources and social security development (2010); see http://www.molss.gov.cn/gb/zwxx/2011-05/24/content_391125.htm.

FIGURE 1



Size (Billions of Yuan) and Growth Rate of China's Insurance Market

Source: Authors' calculations based on *China Insurance Yearbook* and *China Statistical Yearbook*.





Source: Authors' calculations based on *China Insurance Yearbook* and *China Statistical Yearbook*.



FIGURE 3

China's Insurance Density and Penetration Relative to Other Countries, 2010

Source: Authors' calculations based on World Insurance in 2010, Swiss Re Sigma, 2011(2).

economies is displayed in Figure 3. The figure shows that measures of insurance density and insurance penetration are far below worldwide averages (\$627.30 for insurance density and 6.90 percent for insurance penetration in 2010, respectively). China ranked 61st in insurance density and 39th in insurance penetration among world economies in 2010.

Insurance Market Structure

The number of insurance sellers in China has increased along with the size of the private insurance market. In 1980, the market was served only by the People's Insurance Company of China (PICC), which was directly controlled by the government (Sun et al., 2007). In 1996, only 21 insurance firms operated in the market. By 2010, 126 insurance firms were doing business in China. Table 1 reports the number of insurance companies, subsidiaries and branch offices, and the Herfindahl–Hirschman Index (HHI) of competitiveness for life and nonlife insurance for selected years. The data show that the competitiveness of the market has increased with the growing numbers of market players. Nonetheless, the markets remain relatively concentrated. In 2010, the nonlife insurance HHI was 1850 and the HHI for life insurance was 1800. To provide a benchmark, U.S. Department of Justice merger guidelines categorize markets with HHI greater than 1800 as "concentrated" (DOJ/FTC, 1997).

Some of the growth in number of firms is due to the entry of foreign insurers into China. As part of China's entry into the WTO in 2001, China's insurance market was among the very first industries opened to foreign investors. Figure 4 shows the entry of foreign insurers in each year 1992–2010. Foreign entry accelerated after 2001, especially the entry

Conce	Concentration in China's Life and Nonlife Insurance Markets				
Year	Insurance Companies	Provincial Subsidiaries	Branches	HHI of China's Nonlife Insurance Market	HHI of China's Life Insurance Market
2001	36	_	_	5,700	4,150
2004	60	-	-	3,900	3,200
2007	102	941	57,191	2,400	2,400
2010	126	1,294	68,061	1,850	1,800

Source: Authors' calculations based on China Insurance Yearbooks for selected years.

FIGURE 4

TABLE 1

Entry of Foreign Insurers Into China's Life and Nonlife Insurance Markets



Source: Authors' calculations based on China Insurance Yearbook and companies' websites.

of life insurers. Overall, entry of foreign life insurers has been more robust than that of nonlife insurers.⁷

⁷ This may be due to the greater differences in China's regulation of foreign and domestic nonlife insurers as compared to regulations for foreign and domestic life insurers. For example, until 2004 foreign nonlife insurers were forced to operate as branches rather than subsidiaries (Zhao, 2009), and foreign insurers are still excluded from offering compulsory insurances such as automobile liability coverage (Huang and Query, 2007). Nonetheless, China's regulations are more restrictive for foreign insurers than for domestic insurers, even in life insurance. This difference may be an important determining factor in insurance market structure, competition, and efficiency (Zhao, 2009).

FIGURE 5

The Structure of China's Insurance Regulatory System



Source: Authors' construction.

CHINA'S INSURANCE REGULATORY SYSTEM

As discussed by Zheng (2011), insurance regulation in China is governed by laws (the Insurance Law and other laws) passed by the National People's Congress (NPC), administrative regulations developed by the State Council, and department rules issued by the CIRC.⁸ Industry self-regulation occurs through an insurance industry association, and less formally, legal supervision occurs through the actions of the courts, and social supervision through the media and private citizens. Figure 5 displays the relationships between regulatory governance structures, and the important functions of the regulatory institutions are described below.

The NPC and the Insurance Law

As defined in China's Constitution, the NPC is the most powerful authority in the country: it determines national priorities, names the leaders of governmental institutions, and passes laws. The Insurance Law,⁹ the first law put into place regarding the operation

⁸ In addition, international treaties such as the WTO and judicial interpretations of laws affect the industry's regulatory and operating environment.

⁹ In addition to the Insurance Law, some provisions in China's Maritime Law and Criminal Law relate to insurance. Apart from specific legislation, the insurance business and insurance

TABLE 2	2
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	First Edition	First Modification	Second Modification
Time of modification	June 1995	October 2002	February 2009
Time of coming into effect	October 1995	October 2002	October 2009
Chapters and provisions	8 chapters,	8 chapters,	8 chapters,
	152 provisions	158 provisions	187 provisions
Provisions modified		33	145
Provisions added		6	48
Provisions deleted or merge	ed	2	19

The Insurance Law and Its Modifications

Source: Insurance Law chapters, tabulated by author.

and supervision of insurance markets, was approved and implemented in 1995. With 152 articles in 8 chapters, this law provided detailed and systematic rules for insurance contracts, insurance companies, insurance activities, and insurance supervision in China.

Table 2 chronicles the development of the Insurance Law over time. In 2002, the NPC approved the first modification of the Insurance Law. Modifications were aimed primarily at fulfilling China's commitment of opening its insurance market upon joining the WTO. Almost immediately (beginning in October 2004), work began on developing yet more substantial revisions to the Insurance Law. This second modification expanded the number of provisions in the law from 158 to 187, and revised or replaced nearly every provision in the earlier law. This new Insurance Law came into effect in October 2009, and is more complete on important facets of industry oversight such as legal standards in the insurance supervision. Notably, the new law increases the CIRC's enforcement and supervisory authority.

The State Council

The State Council is the representative of NPC and performs the executive functions of government. Administrative regulations are developed by the State Council as authorized by the constitution and laws of the Republic. The State Council delegates active regulatory oversight to the specific regulatory departments of each sector of the economy. As a result, the CIRC performs most of the active regulation of the insurance sector, and NPC administrative regulations are established only for large issues or issues that affect more than just the insurance sector. Examples include regulations regarding foreign insurers (Foreign Insurance Administrative Regulation, 2001) and regulations regarding

supervision are also regulated by other related legal norms. For example, as in many other countries, contract law can be applied to regulate the insurance contract and corporate law can put constraints on insurance companies. Laws regarding government administrative review, administrative penalty, or administrative licensing apply to the activities of insurance supervisors.

liability for motor vehicle accidents (Administrative Regulation on Compulsory Motor Vehicle Accident Liability Insurance, 2006).

The CIRC

The CIRC is the primary regulator of private insurance in China, conducting direct supervision of the insurance industry according to the authority granted to it by the State Council. The CIRC is considered to be a functional department of the State Council. All functional departments of the State Council, including the CIRC, have independent rule-making authority and CIRC has been very active in rule making.¹⁰ While administrative regulations of the State Council take legal precedence over department rules, CIRC usually works in cooperation with the State Council to develop those regulations. For example, CIRC worked with the State Council on the administrative regulations regarding foreign insurance companies and motor vehicle insurance regulations that were mentioned above.

CIRC shoulders much of the insurance regulatory duties and its regulatory independence and impact have increased over time. The regulatory responsibilities of CIRC are broadly defined and are comparable to those of insurance regulators in many countries. Table 3 compares CIRC responsibilities¹¹ with those of insurance regulators in 78 countries who reported information to the Insurance Laws Database of International Association of Insurance Supervisors (IAIS) in 2009; the comparison shows that CIRC performs the usual set of regulatory functions.

Consistent with its independence and broad authority, CIRC has been active in rule making since its establishment. Figure 6 shows CIRC rule-making activity by year for 2002–2010; during that period CIRC promulgated 56 rules covering wide-ranging aspects of insurance operations.

Within the CIRC itself there are currently 16 operational departments, which can be divided into market regulatory departments (Life Insurance Department, P&C Insurance Department, Insurance Intermediary Department, etc.) and functional departments (Development and Reform Department, International Department, Statistics Department, etc.). To improve local enforcement, the CIRC has also established 35 branch offices ("dispatched institutions") in 22 provinces, 4 municipalities, 4 autonomous regions, and 5 cities throughout China. Since 2010, the CIRC has been building regulatory bureaus in secondary cities. So far there are five such bureaus in the cities of Suzhou, Tangshan, Yantai, Wenzhou, and Shantou.

The central departments of CIRC are responsible for regulatory policymaking, and industry-level issues such as licensing of insurance companies are handled by these departments. The branch offices of CIRC do not have rule-making authority but are responsible for and largely determine the local enforcement of insurance regulations. Due to differences in enforcement activities, Zhao (2009) emphasizes that there are many regional differences in insurance regulation and supervision in China, with the more

¹⁰ This authority is granted by the Legislative Law of the People's Republic of China; rules issued by the departments are called "department rules."

¹¹ Obtained from the website of CIRC.

TABLE 3

CIRC's Regulatory Duties Compared to Other Nations

Duty or Function	Number of Nations With Function	Proportion With Function(%)	CIRC Function?
Participate in drafting insurance legislation	73	93.6	Yes
Issue insurance regulations	67	85.9	Yes
Issue binding guidelines	64	82.1	Yes
Issue nonbinding guidelines	58	74.4	Yes
Licensing	74	94.9	Yes
Control of premium rates	36	46.2	Yes
Control of policy conditions	49	62.8	Yes
Control of insurance companies' owners	70	89.7	Yes
Control of insurance companies' investments	69	88.5	Yes
Control of solvency/capital requirements	77	98.7	Yes
Monitor annual/shareholders' accounts	63	80.8	Yes
Examine supervisory/financial returns	72	92.3	Yes
Carry out on-site inspections	76	97.4	Yes
Take actions in case of financial difficulty	76	97.4	Yes
Withdrawal of a license	74	94.9	Yes
Wind up insurance companies	57	73.1	Yes
Prevent money laundering	62	79.5	No
Publish statistical information on the insurance market	71	91.0	Yes
Deal with complaints	66	84.6	Yes
Collect taxes	9	11.5	No

Source: IAIS Law Database and CIRC website, tabulated by authors.

developed provinces in the East taking the lead in modernizing insurance regulatory practices.

Industry Self-Regulation

The industry's self-regulatory organization is the Insurance Association of China (IAC), founded March 12, 2001. The Association is authorized by the CIRC and registered by the National Ministry of Civil Affairs as the self-regulatory organization of the Chinese insurance industry. It is a voluntary, not-for-profit organization. At present the IAC has 176 members, including 105 insurance companies, 36 insurance intermediary firms, and 35 local insurance industry associations.

In addition to the IAC, there are also self-disciplinary "Intermediary Associations" for insurance intermediaries on the provincial and city levels (Zhao, 2009). First established in Shenzhen in 2004, an Intermediary Association takes responsibility for setting up self-disciplinary standards for its members. Although usually supervised by local CIRC



FIGURE 6

Number of CIRC Department Rules Promulgated by Year

Source: CIRC website, tabulated by the authors.

branch offices, these local associations are not officially recognized by the Insurance Law.

Self-regulatory organizations strengthen self-discipline within an industry by putting constraints on the business activities of its members. The IAC regards this as its primary mission and declares the following specific aims:

- To constrain unfair activities by formulating industry standards and professional industry guidance.
- To promote honesty in professional ethics and to establish a complete system of accountability in the insurance industry.
- To strengthen the self-discipline management of insurance professionals and intermediary agencies by supervising business activities and enforcing compliance through penalties.

In developed market economies, industry self-regulatory organizations often play a very important role in promoting market self-discipline. These organizations provide strong professional services and education, participate in the development of legislation, formulate industry standards of conduct, and enforce adherence to laws, regulations, and industry standards. In contrast, the IAC has a very short history, is relatively small in size, and lacks real independence from the CIRC. For example, the IAC has no enforcement authority, but may only warn, condemn publicly, or ask the CIRC to impose a punishment.¹² Thus, in China the role of industry self-regulation is less important.

Legal and Social Supervision

The Supreme People's Court serves to provide judicial interpretation of laws and has issued a number of rulings regarding application of the Insurance Law (Zheng, 2011). One important example is a decision in 2004 that established benchmarks for compensating personal injury claims in automobile accidents (Huang and Query, 2007). However, the role of China's judicial system in enforcing insurance contracts and promoting market discipline is relatively undeveloped and is still evolving. The courts in China are not independent of the state and are funded and managed by local governments. China does not have a strong history of commerce being governed by contract and liability norms, and there is not a well-developed case law system (van Rooij, 2011). Lack of well-trained judges in insurance law and inconsistency of judgments across similar cases seem to be obstacles in efficient judicial supervision.

Less formal aspects of social supervision of industries include attention from consumers, the news media, and public opinion. In recent years, insurance regulators have begun to pay more attention to this mechanism of disciplining the insurance market. For example, in 2009 the CIRC issued opinions on professional norms for insurance regulators and insurance professionals, and emphasized that insurance consumers—not just regulators, companies, and intermediaries—should become informed about them in order to strengthen supervision by society.¹³

Nonetheless, effective social supervision is difficult in an area such as insurance due to its complexity and the lack of easily visible signs of regulatory violations. van Rooij (2011) argues that "people's regulation" is most effective when the regulated behavior is simple and violations are easily visible. Moreover, behavioral norms for insurance dealings are not well developed on the customer side of the market either. Fraud in insurance applications, and in insurance claiming by consumers and by consumers in collusion with agents, is perceived to be a large problem (Huang and Query, 2007; Zhao, 2009). For example, news articles report that more than 70 insurance fraud cases were detected in Jiangsu Province alone since 2008, resulting in over 100 million yuan in losses to insurance companies.¹⁴

EVOLUTION OF INSURANCE REGULATION AND SUPERVISION

The evolution of China's approaches to insurance supervision and regulation has been shaped by many forces, including the progress of domestic insurance markets, the increasing international connectedness of the markets, and international developments in insurance supervision. Entry into the WTO in 2001 marked a new era not just for China's insurance industry but also for its regulation and supervision.

¹² The information is taken from the Constitution of the Insurance Association of China (2001).

¹³ "The Circular of Understanding and Carrying out 'The Norms of Insurance Regulators' and 'The Norms of Insurance Professionals,'" 2009.

¹⁴ In response, China's first Anti-Fraud Center was established in Jiangsu Province in 2011.

Opening up of the market strengthened connections and cooperation with international organizations and other insurance regulators. In many areas, the CIRC has been active in monitoring and adopting the common global standards promulgated by such bodies as the IAIS and the European Union (EU). In 2005 the IAIS articulated the "three pillars" of insurance supervision as consisting of regulation of corporate governance structure, regulation of market behavior, and regulation of solvency. China adopted the "three pillars" as the basis for insurance supervision in 2006.¹⁵ China is also closely following the implementation of Solvency II in Europe, and studying the management of systemic risk as an important part of future insurance regulation.

More generally, over the past decade China has modernized its insurance regulation and supervision in a variety of dimensions, including both regulatory process and content. Some of the major developments are described below.

Asset Management Regulation

Asset management in insurance companies has traditionally been strictly regulated in China. The Insurance Law of 1995 restricted insurance companies' assets to be invested only in bank deposits, government bonds, corporate bonds, and other funds stipulated by the State Council. The restrictions have been relaxed gradually over time, beginning in 1998 when a certain proportion of insurance assets were permitted to be invested in securities. During the succeeding years, the nature of allowable investments has been gradually expanded.¹⁶ Nonetheless, asset management regulations remain restrictive in comparison to those in other countries.

Table 4 presents a comparison of investment limitations for China's insurance companies relative to other jurisdictions in 2010. Chinese insurance companies face significant restrictions on investing in risky assets, with no more than 20 percent of assets permitted to be invested in stocks or in corporate bonds, respectively, and no more than 10 percent of assets permitted to be invested in real estate and mortgages. Overall, nearly half of insurance company assets must be invested in government bonds and bank deposits. China's Central Bank reports that in 2011, 32 percent of insurance companies' assets were invested in bank deposits, while bonds (both government and corporate) contributed 47 percent.¹⁷

Solvency Regulation and Supervision

The Insurance Law of 1995 provided only basic guidelines regarding minimum solvency requirements for insurance companies. The first comprehensive and systematic regulation regarding solvency supervision came about in January 2001 in conjunction with requirements for China's entry into the WTO. This regulation developed a ratio-based solvency monitoring system, specifying the calculation of ratios, and standards for recognizing assets. It also established measures for dealing with distressed or insolvent insurance companies.

¹⁵ "Several Opinions on the Reform and Development of Insurance Industry from the State Council," June 16, 2006.

¹⁶ A detailed list of specific rule changes over time is available from the authors.

¹⁷ Bank of China, China Financial Stability Report 2012.

TABLE 4

Investment Limitations in China and Other Countries, 2010

	Maximum Limit, %, Average Among All IAIS Reporting Jurisdictions		Maximum Limit
	Life	Nonlife	China (%)
Corporate bonds	37	37.4	20
Government bonds	72.8	72	
Stock shares	26.9	27.8	20
Mortgages	30.8	30.9	10
Real estate	30.1	28.9	
Loans	19.1	19.3	
Cash	26.7	26.9	
Derivatives-traded	13.6	14.2	
Derivatives—OTC	5	5	
Hedge funds	30.7	30.7	
Unit trust	32.4	32.2	

Source: IAIS Insurance Laws Database, the Temporary Administrative Measures of Utilization of Insurance Capital by CIRC.

The Insurance Law modification of 2002 led to additional strengthening of this system by revising the solvency ratios and requiring insurers to submit periodic reports on the solvency measures. CIRC started to build a modern solvency regulation system in 2003. With the establishment of the China Insurance Solvency Standards Committee in 2007 and the first complete solvency regulation provision in 2008, CIRC established a dynamic risk-based solvency regulatory framework consistent with international standards, indicating the establishment of "the first-generation insurance solvency regulation system in China."¹⁸ After the financial crisis, and in the wake of the evolution of the global financial regulatory system, CIRC began development of a new solvency monitoring system better suited to the new market environment and global situation. CIRC issued a planning document in 2012 that announced plans to draft a "second-generation system" by the end of 2014.¹⁹

The growing concern with solvency regulation from the CIRC has led directly to an increase in required capital injections from insurance shareholders. Table 5 shows the number of insurance companies whose shareholders injected capital and the total amount injected (RMB yuan), in each year 2005 through 2011. Even prior to the global financial

¹⁸ According to the "planning of the second-generation insurance solvency regulation system," the first-generation system was finished in 2007–2008. See http://www.circ.gov.cn/tabid/106/InfoID/197933/frtid/3871/Default.aspx.

¹⁹ See http://www.circ.gov.cn/web/site0/tab4566/i203919.htm.

	Number of Injections		Amount of Capital	Injections (Yuan)
	Life	Nonlife	Life	Nonlife
2005	0	1		40,000,000
2006	3	0	775,000,000	
2007	8	0	1,890,000,000	
2008	5	1	1,270,000,000	20,000,000
2009	2	0	250,000,000	
2010	12	0	2,935,000,000	
2011	14	5	3,248,000,000	572,900,000

TABLE 5Capital Injections, 2005–2011

Source: News Release from CIRC website, calculated by the authors.

crisis, capital injections to life insurers were substantial in some years, and the number and amount of capital injections increased dramatically following the crisis. In 2011, 14 life insurers and 5 nonlife insurers required capital injections totaling nearly 4 billion (RMB).

On-site and off-site examinations (inspection of insurance company statements and materials) are important supervisory methods used by insurance regulators worldwide (e.g., Klein and Schacht, 2001) and are an important tool for China's insurance regulators. In the past decade, the CIRC has expanded requirements for insurance company reporting, broadened the focus of off-site examinations, and improved its risk-monitoring measures. It has also inaugurated a program of on-site spot-inspections to directly examine the operations, activities, and financial situations of insurance companies.

The CIRC carried out nationwide spot-inspections for the first time in 2006. These inspections were broadly focused and included examination for irregular operations in auto insurance and large property insurance, irregularities in fee collections from the bank and postal agency life insurance business, the accuracy of financial data, other business fraud, and problems regarding insurance capital utilization and statistical data. The use of on-site examinations has continued as an important focus of supervision since that time. By 2008 the CIRC sent out 2,052 examination groups to carry out spot-inspection of six insurance companies, 1,407 insurance branches, and 740 insurance intermediaries in the property–liability and life insurance sectors.²⁰

The Insurance Protection Fund

China established an insurance guaranty fund (the Insurance Protection Fund, IPF) in January 2005. The fund was initially managed by CIRC under the oversight of an IPF Council consisting of representatives of insurance companies, the Legislative Affairs

²⁰ Dingfu Wu, China Insurance Industry Development Blue Book, 2009.

Office of the State Council, Ministry of Finance, the People's Bank of China, and others.²¹ In October 2007, responsibility was transferred to a new entity, the China Insurance Protection Fund Ltd. Co. New administrative regulations were put into place in September 2008, which established rules for the business operations, governance structure, financing, and information-sharing activities of the Protection Fund management company.

The IPF provides full compensation of losses up to 50,000 yuan for policyholders of insolvent nonlife insurers; individual policyholders receive 90 percent of losses over 50,000 yuan and institutional policyholders receive 80 percent of losses. The policies of insolvent life insurers are transferred to another life insurer and the accepting insurance companies receive compensation from the fund for losses associated with the transferred polices. Insurer compensation is limited to 90 percent of losses for individual policies and 80 percent of losses for institutional policies.

There have been no instances of bankruptcies for insurance companies in China. However, the IPF has injected capital into two companies in financial distress. Xinhua Life Insurance Company, the fourth largest life insurance company in China at that time, reported that its CEO misappropriated company assets in 2007.²² To protect the policyholders and help the company through the distress, the IPF began purchasing company shares. The IPF initially purchased 22.53 percent of the company's shares by injecting over 1.619 billion yuan into the company;²³ by 2008 the IPF held 38.82 percent of shares and was the largest single shareholder of the company. In November 2009, the IPF transferred its total shareholding of Xinhua Life to Central Huijin Investment Ltd., a state-owned investment company.

The second IPF rescue operation occurred in 2011 when China United Insurance Company, an insurance group with a long history, fell into financial distress due to improper management. The IPF purchased 57.43 percent of the company's shares in November 2011²⁴ and injected another 6 billion RMB in March 2012, which left the IPF with a 91.49 percent stake in the company. After receiving a further 7.81 billion RMB in capital from another large investor in October 2012, China United Insurance moved beyond the insolvency problem. The IPF remains the second largest shareholder in the company, but is now looking for a means of exit.

Insurance Rate Regulation

In the initial phase of the private insurance market, in which there was only a single government-owned insurer, government-set rates were quite natural. At that time, private insurance was more like a public service provided by the government's agent, the People's Insurance Group. As new entrants led to competition in the market, the

²¹ "Administrative Measures of Insurance Protection Fund," 2005, http://www.circ. gov.cn/tabid/106/InfoID/19966/frtid/3871/Default.aspx.

²² Xinhua Life insurance company reported 26 billion RMB premium revenue in 2006, which made it the fourth largest life insurance company in China. Data are from CIRC's statistics.

²³ See CIRC's report on this equity transaction approval, http://www.circ.gov.cn/tabid/ 106/InfoID/47341/frtid/3871/Default.aspx.

²⁴ See CIRC's report on this equity transaction approval, http://www.circ.gov.cn/tabid/106/ InfoID/185242/frtid/3871/Default.aspx.

government has experimented with relaxation of rate regulation. Currently, however, most insurance product lines are still under strict rate regulation.²⁵

There are two basic objectives that may be pursued in regulated insurance rates: regulations can try to control the upper limit of premium rates to prevent monopoly pricing, or regulations can set lower limits on premium rates to prevent vicious price competition, which could lead to insolvencies. In the Chinese insurance market, due to concerns that insurers will blindly pursue market share in selling relatively homogeneous products, insurance rate regulation has primarily focused on the second objective.

In some countries, insurance rate regulation may also place limits on the differences in premiums paid by different groups of consumers, in an attempt to improve insurance affordability for high-risk or low-income consumers. In China, rate regulation serves this purpose for certain kinds of insurance, such as agricultural insurance, but is not a focus of rate regulation in general.

Rate regulation of private passenger automobile insurance provides a useful illustration of China's experiences.²⁶ As one of the most important nonlife insurance products, automobile insurance market remains the most stringently rate-regulated line. However, there have been three waves of market-oriented rate regulation reforms since 1980:

- Wave 1 (1988–1993) was driven by the entry of new market players when the government decided to expand the set of insurers to eliminate the monopoly held by the People's Insurance Group. Along with the entry of China Ping'an Insurance Group and several other insurance companies, rate regulation was relaxed from government rate setting to government prior approval of company rates. With rate flexibility allowed, and facing an entrenched monopoly, the new market players engaged in premium cutting to pursue greater market shares. This period of market-set rates was thought to be a failure and was ended by the regulator (the Central Bank) in 1993, and competition in products and rates was again eliminated. All insurers were required to issue the same contract form, and government-set rates were established for each region of the country. All provisions regarding auto insurance contracts and rates were controlled by the regulator, leaving no room for differentiation across insurers.
- Wave 2 (2001–2006) occurred after the establishment of the CIRC and China's entry into the WTO. Although the WTO did not explicitly require relaxation of rate regulation, it nonetheless put pressure on China to modernize insurance regulation. The CIRC started to relax rate regulation by allowing insurers to implement their own insurance product provisions and rates. This process eventually failed again due to underpricing problems. In response, CIRC set up three universal contract forms (offering different combinations of coverage) along with premium standards

²⁵ According to Administrative Measures for Life Insurance Provisions and Premium Rates (2011) and Administrative Measures for Non-Life Insurance Provisions and Premium Rates (2010), the premium rates of all major insurance product lines must be approved by CIRC before the companies want to use them.

²⁶ The rate regulation discussed here does not apply to the Compulsory Third Party Motor Vehicle Liability Insurance, whose rates remain set by the CIRC.

for each form. These three contract forms were the only forms that auto insurers could offer. $^{\rm 27}$

• Wave 3 (2011–) began in 2011. This time, the CIRC put certain solvency requirements on insurers who wish to apply for flexible rate-making authority.²⁸ These requirements are an attempt to prevent insurers with poor financial and solvency performance from engaging in excessive price competition, and thereby to ensure that competitive rate setting will not lead to unstable markets. Insurers who are granted flexible rate-making authority must report contract provisions and rates to CIRC, including basic assumptions in making the rates and actuarial analysis supporting the rate structure.

Disclosure and Consumer Protection

Consumer protection has attracted increasing attention in insurance regulation. Irregularities in insurance contract fulfillment have been a persistent problem for consumers and have hindered the expansion of the insurance market. Numerous (unsubstantiated) reports by consumers on social media sites describe disputes with insurers in areas including contract features, underwriting decisions, and claims. According to a survey of insurance consumers conducted by Shaanxi Consumers Association in 2010,²⁹ difficulty in claim filing was thought to be the most important concern for the consumers when considering purchasing insurance (49.3 percent). More substantiated reports of consumers' problems with insurers can be found in the Consumer Education section of CIRC's website, which provides examples of selected cases of irregular operations encountered by regulators.³⁰

The most significant modification in the new Insurance Law of 2009 was its increased attention to consumer protections, demonstrating the determination of regulators to improve the contracting environment. Observers have noted that the law will put heavy pressures on insurance companies in the short run, due to the substantial new restrictions on market conduct and increased disclosure requirements (Jin, 2009). However, these same observers note that the strengthening of regulation and market transparency should improve the health of the market in the long run (Jin, 2009; Hu, 2009).

The Insurance Law requires formatted provisions in insurance contracts to protect consumers from overlooking important terms and conditions. The rights of insurers to terminate contracts are restricted to situations when the insurer can demonstrate that the insured engaged in improper or fraudulent behavior. Procedures and time limits for claims payment (within 10 days of coming to agreement) were also established in the law.³¹

In the past 3 years, the CIRC has issued major new regulations regarding disclosure requirements for insurance companies. In 2010, seven specific areas in which

²⁷ See the policy provision by CIRC: http://www.circ.gov.cn/tabid/106/InfoID/34560/frtid/ 3871/Default.aspx.

²⁸ See the policy provision by CIRC: http://www.circ.gov.cn/tabid/106/InfoID/194826/frtid/ 3871/Default.aspx.

²⁹ See http://www.cqn.com.cn/news/wqpd/gmwq/366934.html.

³⁰ See http://www.circ.gov.cn/web/site47/tab4339/.

³¹ Li and Chongmiao (2009) discuss nine areas in which the law increases consumer protections.

insurance companies must release information to the public were identified.³² Companies are required to report the relevant information on their website and in a newspaper designated by the CIRC. Reports must be released annually, and the reports of at least the most recent 5 years must be maintained on the company website.

Regulation of Foreign Insurers

Entry into the WTO committed the Chinese government to open its insurance markets to foreign competitors. Since that time, restrictions on location, products, reinsurance, ownership, and other facets of insurance company operations have been gradually loosened. Although insurance should be considered one of the industries that is most open to foreign investors, there are still some very crucial restrictions on foreign insurers.

For example, foreign nonlife insurers are not allowed to underwrite third-party liability insurance for motor vehicles, which has hindered development of their motor vehicles insurance products. Also, foreign investors are still constrained to holding no more than 50 percent of a life insurer's shares. The result is that 10 years after the opening up of the market, foreign insurers are still "struggling" in China's insurance market. The market shares of foreign insurers in China are only about 1 percent in the nonlife sector and 5 percent in the life sector, far below that in other countries' insurance markets.³³ The discriminatory regulation is at least one of the causes of this situation.

PERSPECTIVES ON INSURANCE REGULATION IN CHINA

As the preceding discussion makes clear, China's insurance regulatory system developed rapidly but unevenly, with some areas receiving inadequate regulation and others being overregulated. The speed and direction of regulatory reforms has responded to these imbalances and to developing economic and market conditions in the industry. Along with the blind pursuit of market expansion and development came a number of associated market problems, and this coupled with changes in the international insurance market after the global financial crisis have modified the development objectives for China's insurance industry. In recent years, the financial strength and health of the industry has gained in emphasis, and the need for consumer protections has attracted growing attention.

It is by now well recognized in comparative political and economic analysis that institutional history and context are important determinants of the evolution of institutions in response to pressures for change. With this in mind, the path of China's insurance regulatory development must be viewed in the context of China's more general transition from a planned economy to a socialist market economy. Much has been written about China's unique approach to transition, which included gradual and pragmatic reforms and development of private enterprises operating in parallel with state-owned enterprises (Qian, 1999, 2000; Ahrens, 2007). This approach characterizes the transition in the insurance sector as well as in the economy overall.

³² CIRC, "Administrative Measures of Information Releasing of Insurance Companies," 2010.

³³ The premium data are from CIRC's website, and market share is calculated by the authors. For a more detailed analysis of this issue, see Chen et al. (2012).

FIGURE 7

A General Model for China's Insurance Regulatory Evolution



In evaluating changes in public management in 10 countries since 1980, Pollitt and Bouckaert (2000) relate a general model of public management reform, in which they argue that public management reforms are driven by a variety of external forces but are shaped by the political and administrative systems within a country. According to these authors, the political system shapes the perceptions of what evolution is desirable and the administrative system determines what is feasible; together, these determine the speed and direction of reforms. We apply this model more narrowly to the evolution of China's insurance regulatory system, where "evolution" is used to refer to the broad scope of changes including the drift in regulatory philosophy, the modification of the Insurance Law, the increasing focus on solvency and consumer protection, and greater cooperation with international markets and organizations. Figure 7 depicts the interrelationships between the various forces at work in China's insurance regulatory evolution.

China's overall stage of economic development also influences the nature and evolution of insurance regulation. A growing literature considers the special problems that governments in developing countries face when regulating private industries (Laffont, 2005).³⁴ The primary thesis of this literature is that certain institutional weaknesses in developing countries make effective regulation more difficult and should be accounted for when designing the regulatory system. As outlined by Estache and Lewis (2009), regulators in developing countries are usually subject to one or more of the following institutional weaknesses: limited regulatory capacity, limited commitment, limited accountability, and limited fiscal efficiency.

Qian (1999) rightly notes, however, that on the one hand China is a developing country and on the other hand China is transitioning from a centrally planned economy. This creates special characteristics which must be accounted for in understanding the development of China's insurance regulation. As indicated by van Rooij (2011), China's regulatory capacity and fiscal efficiency are stronger than in many other countries due to its long history of state administration.

China's current market economic system has evolved from a strong planned economy, which, together with the socialistic political system, leaves China with strong bureaucratic actors in almost every economic field. This was initially manifested as strong "topdown" administrative interference in market operations. A perfect example is the initial supervisory priority placed on expanding the market and accelerating its development when the insurance industry was first developing. The strong "top-down" bureaucratic system caused severe neglect of consumer protection in the industry. Through incremental change this has gradually been transformed into promoting the healthy development of the market, as evidenced by the increasing attention to consumer protection in the Insurance Law of 2009.

However, the lack of effective constraints on government actions makes limited commitment and limited accountability issues significant problems in China. As described by Qian (2002), China's 30-year economic growth might be characterized as a miracle given the absence of many conventional institutions such as rule of law and secure private property rights. In the insurance industry, high entry barriers and discriminatory treatment of foreign and privately owned companies (compared to the state-owned companies) have received frequent criticism.³⁵ How such problems will affect the future development of the insurance market must be considered by anyone wanting to make predictions about these issues.

Nonetheless, regulatory process is gradually evolving along with the continual efforts to modernize regulatory rules and procedures to accord with international standards. Compared to the 2002 Insurance Law modification, which was approved in a single process by the Standing Committee of the Ninth NPC, the Insurance Law of 2009 went through a more rigorous legislative process. CIRC started the modification process as early as 2004, and the first draft approved by the State Council in August 2008 went to the Standing Committee of the Eleventh NPC. After that, three rounds of reviews were

³⁴ Although this literature has considered almost exclusively the regulation of infrastructure monopolies such as utilities, some principles may be extended to regulation of financial services such as insurance.

³⁵ Recent investigative journalism reported in the *New York Times* offers a fascinating story of asymmetric treatment and lack of regulatory accountability within the insurance regulatory system as recently as 10 years ago (Barboza, 2012a, 2012b).

adopted before the final version was approved, with more than 60 different entities or organizations involved. Opinions from consumers were collected through a government website during the second round, which contributed more ideas on consumer protection provisions in the new law.³⁶ This legislative process allowed the interests of many more stakeholders to be considered in developing the law, and wider stakeholder engagement and involvement are important means by which accountability can be increased.

The evolution of China's insurance regulation outlined in this article reflects remarkable progress in institutional development over a short period of time. Rapid development of the market due to global and domestic economic forces has greatly compressed the timeframe for development of regulatory institutions, providing a fascinating case study and a useful example for emerging industries within China and around the developing world.

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³⁶ Insurance Law Modification in 2009, http://www.npc.gov.cn/huiyi/lfzt/bxf/node_6627.htm.

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Applying IFRS 17

A closer look at the new Insurance Contracts Standard

June 2021



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What you need to know

- The IASB issued IFRS 17, a comprehensive new accounting standard for insurance contracts in May 2017 which was subsequently amended in June 2020.
- IFRS 17 will become effective for annual reporting periods beginning on or after 1 January 2023, with early application permitted.
- The IFRS 17 model combines a current balance sheet measurement of insurance contracts with recognition of profit over the period that services are provided.
- The general model in the standard requires insurance contract liabilities to be measured using discounted probability-weighted current estimates of future cash flows, an adjustment for non-financial risk, and a contractual service margin representing the profit expected from fulfilling the contracts.
- Effects of changes in the estimates of future cash flows (and the risk adjustment for non-financial risk) relating to future services are recognised over the period services are provided rather than immediately in profit or loss.
- The standard includes specific adaptations for the measurement and presentation of insurance contracts with direct participation features and for reinsurance contracts held.
- The standard contains a simplified model, the premium allocation approach, which can be used for contracts with coverage periods of one year or less, or when doing so approximates the general model.
- Entities have an option to present the effect of changes in discount rates either in profit or loss, or in other comprehensive income, in order to present this in way that fits best with the accounting for assets that back the insurance liabilities.

Introduction

The International Accounting Standards Board (IASB) issued IFRS17 *Insurance Contracts* (IFRS 17 or the standard) in May 2017. In June 2020, IFRS 17 was amended by *Amendments to IFRS 17* (the June 2020 amendments). Following these amendments, IFRS 17 is effective for annual periods beginning on or after 1 January 2023, with earlier application permitted, provided the entity also applies IFRS 9 *Financial Instruments* (IFRS 9) at the same time.

IFRS 17 supersedes IFRS 4 *Insurance Contracts*, an interim standard that allowed entities to use a wide variety of accounting practices for insurance contracts, reflecting national accounting requirements and variations of those requirements. The IASB had always intended to replace IFRS 4; the differences in accounting treatment across jurisdictions and practices have made it difficult for investors and analysts to understand and compare insurers' results. Most stakeholders agreed on the need for a common global insurance accounting standard even though opinions varied as to what it should contain. Long-term and complex insurance risks are difficult to reflect in the measurement of insurance contracts. In addition, insurance contracts are subject to several measurement challenges. Some previous accounting practices under IFRS 4 did not adequately reflect the true underlying financial position or the financial performances of these insurance contracts.¹

More than 20 years in development, IFRS 17 represents a complete overhaul of accounting for insurance contracts. The new standard will increase the transparency of insurers' financial positions and performance and is intended to make their financial statements more comparable with both other insurers and other industries.

The new standard applies a current value approach to measuring insurance contracts and recognises profit as insurers provide services to policyholders. The profit or loss earned from underwriting activities are reported separately from financing activities. Detailed note disclosures explain how items like new business issued, experience in the year, cash receipts and payments, and changes in assumptions affected the performance and the carrying amount of insurance contracts.

IFRS 17 is a complex standard. It covers accounting for a wide range of contracts that insurers issue globally. The degree of change compared to existing practice will vary based on existing accounting policies and the types of business insurers write. However, the change will be significant for nearly all insurers. Therefore, the IASB has allowed more than three years after issue date for the standard to become effective.

The changes in financial reporting that come with IFRS 17 will affect both preparers of financial statements and users. Users of financial statements will receive more and different information about an entity's insurance contracts in the IFRS financial statements than in the past, which may change the way they assess and compare insurers. Preparers will need to help analysts and other users of their financial statements to interpret the new information and understand how it relates to what they receive currently. Analysts may wish to evaluate an insurer's performance on the new basis (albeit estimated), even for comparative periods, before the standard is effective.

¹ IFRS 17.BC1, BC4.

1. Overview of IFRS 17

IFRS 17 establishes principles for the recognition, measurement, presentation and disclosure of insurance contracts issued, reinsurance contracts held and investment contracts with discretionary participation features that an entity issues.

The following diagram visually presents the key features of the standard:



IFRS 17 is the first comprehensive international accounting standard for insurance contracts. IFRS 17 reflects the Board's view that an insurance contract combines features of both a financial instrument and a service contract. In addition, many insurance contracts generate cash flows with substantial variability over a long period. To provide useful information about these features, the Board developed an approach that:²

- Combines current measurement of the future cash flows with the recognition of profit over the period services are provided under the contract
- Presents insurance service results (including presentation of insurance revenue) separately from insurance finance income or expenses
- Requires an entity to make an accounting policy choice whether to recognise all insurance finance income or expense for the reporting period in profit or loss on a portfolio basis or to recognise some of that income or expense in other comprehensive income.

The measurement required by IFRS 17 results in:³

- The liability for a group of insurance contracts relating to performance obligations for remaining service being measured broadly consistent with IFRS 15 - Revenue from Contracts with Customers (IFRS 15) - except that:
 - The measurement is updated for changes in financial assumptions (to varying degrees depending on the type of insurance contract)
 - The liability often includes an investment component typically not in contracts within the scope of IFRS 15

² IFRS 17.IN5 (May 2017).

³ IFRS 17.IN7 (May 2017).

The liability for a group of insurance contracts relating to incurred claims being measured is broadly consistent with IAS 37 Provisions, Contingent Liabilities and Contingent Assets, (IAS 37) except that the liability often includes an investment component that is typically not in contracts within the scope of IAS 37.

An entity may apply a simplified measurement approach (the premium allocation approach) to some insurance contracts. This simplified measurement approach allows an entity to measure the amount relating to remaining service by allocating the premium over the coverage period.⁴

IFRS 17 was effective originally for annual accounting periods beginning on or after 1 January 2021. However, as a result of the June 2020 amendments, IFRS 17 is effective for accounting periods beginning on or after 1 January 2023. Early application is permitted for entities that apply IFRS 9 *Financial Instruments* on or before the date of initial application.

IFRS 17's transition provisions require a full retrospective application of the standard unless it is impracticable, in which case, entities should apply either a modified retrospective approach or a fair value approach (see 17.2. below).

Following the issuance of IFRS 17, the IASB created a Transition Resource Group (TRG). The members of the TRG include financial statement preparers and auditors with both practical and direct knowledge of implementing IFRS 17. The TRG members work in different countries and regions. The TRG's purpose is to:

- Provide a public forum for stakeholders to follow the discussion of questions raised on implementation
- Inform the IASB in order to help it determine what, if any, action will be needed to address those questions. Possible actions include providing supporting materials such as webinars, case studies and/or referral to the Board or Interpretations Committee

Up to the date of this publication, the TRG met three times in 2018 and once in 2019. As of the date of the last TRG meeting, in April 2019, a total of 127 issues had been submitted by constituents of which the TRG discussed 22 in detail. The rest are questions that:

- Have been answered by IASB staff applying only the words in IFRS 17
- Do not meet the submission criteria
- Or
- Were considered through a process other than a TRG discussion (e.g., annual improvements or outreach)

At the time of writing, there are no further TRG meetings scheduled although the TRG submission process remains open for stakeholders to submit questions that they believe meet the TRG submission criteria. While TRG members' views are non-authoritative, entities should consider them as they implement the new standard.

⁴ IFRS 17.IN8 (May 2017).

During the period to May 2019, as a result of the TRG discussions and issues identified by constituents, the IASB discussed and agreed several amendments to IFRS 17. In June 2019, the IASB issued an Exposure Draft - ED/2019/4 *Amendments to IFRS 17* (the ED) containing the proposed amendments. The IASB discussed comments on the ED in the period to May 2020 and then issued the June 2020 amendments to IFRS 17. The June 2020 amendments have been incorporated throughout the applicable sections of this publication.

The views expressed in this publication may evolve as implementation continues and additional issues are identified. Conclusions in seemingly similar situations may differ from those reached in the illustrations contained in this publication due to differences in the underlying facts and circumstances.

2. The objective, definitions and scope of IFRS 17

2.1. The objective of IFRS 17

The objective of IFRS 17 is to ensure that an entity provides relevant information that faithfully represents the recognition, measurement, presentation and disclosure principles for insurance contracts within its scope. This information gives a basis for users of financial statements to assess the effect that insurance contracts have on the entity's financial position, financial performance and cash flows.⁵

2.2. Definitions

The definitions that are relevant to the application of IFRS 17 and included within Appendix A of the standard are likewise included in Appendix A of this publication. A list of these terms is produced below, in alphabetical order. Those items marked with an asterisk (*) were impacted by the amendments to IFRS 17 issued in June 2020.

- Contractual service margin*
- Coverage period*
- Experience adjustment
- Financial risk
- Fulfillment cash flows
- Group of insurance contracts*
- Insurance acquisition cash flows*
- Insurance contract
- Insurance contract services (newly added in 2020)*
- Insurance contract with direct participation features
- Insurance contract without direct participation features
- Insurance risk
- Insured event
- Investment component*
- Investment contract with discretionary participation features
- ► Liability for incurred claims*
- Liability for remaining coverage*
- Policyholder
- Portfolio of insurance contracts
- Reinsurance contract

⁵ IFRS 17.1.

- Risk adjustment for non-financial risk
- Underlying items

How we see it

- IFRS 17 does not mention a "de minimis" limit on the number of insurance contracts that an entity must issue to ensure that its investment contracts with discretionary participation features are within the scope of IFRS 17.
- The IASB's decision to, in line with IFRS 4, retain investment contracts with discretionary participation features within the scope of the insurance contracts standard means that entities account for these contracts under IFRS 17. However, the measurement model under IFRS 17, in many cases, will represent a major change from existing accounting practices applied to investment contracts with discretionary participation features under IFRS 4.

2.3. Scope

An entity should apply IFRS 17 to:6

- Insurance contracts, including reinsurance contracts, that it issues
- Reinsurance contracts it holds

And

Investment contracts with discretionary participation features that it issues, provided the entity also issues insurance contracts

IFRS 17 specifies that all references to insurance contracts throughout the standard also apply to: 7

- Reinsurance contracts held, except:
 - For references to insurance contracts issued
 - The specific requirements for reinsurance contracts held discussed at 11 below
- Investment contracts with a discretionary participation feature as set out above except for the reference to insurance contracts as described at 12.4 below.

In addition, all references to insurance contracts also apply to insurance contracts acquired by an entity in a transfer of insurance contracts or a business combination other than reinsurance contracts held.⁸

It can be seen from this that IFRS 17 applies to all insurance contracts (as defined in IFRS 17) throughout the duration of those contracts, regardless of the type of entity issuing the contracts.⁹ Consistent with other IFRSs it is

Entities will continue to account for investment contracts with discretionary participation features under the insurance standard.

⁶ IFRS 17.3.

⁷ IFRS 17.4.

⁸ IFRS 17.5.

⁹ IFRS 17.BC64.

a transaction-based standard. Consequently, non-insurance entities will be within its scope if they issue contracts that meet the definition of an insurance contract.

The Board decided to base its approach on the type of activity rather than on the type of the entity because:¹⁰

- A robust definition of an insurer that could be applied consistently from country to country would be difficult to create
- Entities that might meet the definition frequently have major activities in other areas as well as in insurance, and would need to determine how and to what extent these non-insurance activities would be accounted for in a manner similar to insurance activities or in a manner similar to how other entities account for their non-insurance activities
- If an entity that issues insurance contracts accounted for a transaction in one way and an entity that does not issue insurance contracts accounted for the same transaction in a different way, comparability across entities would be reduced.

Conversely, contracts that fail to meet the definition of an insurance contract are within the scope of IFRS 9 if they meet the definition of a financial instrument (unless they contain discretionary participation features and the entity also issues insurance contracts). This will be the case even if such contracts are regulated as insurance contracts under local legislation. Such contracts are commonly referred to as 'investment contracts'. If an investment contract contains an insignificant amount of insurance risk, that insignificant insurance risk is not within the scope of IFRS 17 since the contract is an investment contract and not an insurance contract.

The assessment of whether a contract is an insurance contract will include an assessment of whether the contract contains significant insurance risk (discussed at 3.5 below). In addition, even if the contract contains significant insurance risk, an entity needs to assess whether the contract also contains embedded derivatives (discussed at 5.1 below), distinct investment components (discussed at 5.2 below), or a promise to provide distinct goods or services other than insurance contract services (discussed at 5.3 below) that need to be separated and accounted for under other standards.

Contracts within the scope of IFRS 17 are excluded from the scope of the following IFRSs (except for specific exceptions which are discussed separately elsewhere in this chapter):

- IFRS 7 Financial Instruments: Disclosures
- ► IFRS 9 Financial Instruments
- ▶ IFRS 15 Revenue from Contracts with Customers
- ▶ IAS 32 Financial Instruments: Presentation
- ► IAS 36 Impairment of Assets
- IAS 37 Provisions, Contingent Liabilities and Contingent Assets

¹⁰ IFRS 17.BC63.

▶ IAS 38 - Intangible Assets

Any assets for insurance acquisition cash flows (see 7.3 below) are also excluded from the scope of IAS 38.

Contracts within the scope of IFRS 17 are excluded from the measurement provisions of IFRS 5 - *Non-current Assets Held for Sale and Discontinued Operations*.

Contracts within the scope of IFRS 17 are not excluded from the scope of IFRS 13 - *Fair Value Measurement* (IFRS 13) which means that any reference to fair value in IFRS 17 should be fair value as defined and measured under IFRS 13. However, IFRS 17 does not generally require that insurance liabilities are measured at fair value except on transition in certain circumstances and, in those circumstances, IFRS 13's measurement requirements are modified to exclude the demand deposit floor (see 17.5 below).

2.3.1. Transactions not within the scope of IFRS 17

IFRS 17 excludes the following transactions that may meet the definition of insurance contracts: $^{\rm 11}$

- Warranties provided by a manufacturer, dealer or retailer in connection with the sale of its goods or services to a customer (see 2.3.1.A below).
- Employers' assets and liabilities that arise from employee benefit plans, and retirement benefit obligations reported by defined benefit retirement plans (these are accounted for under IAS 19 Employee Benefits, IFRS 2 Sharebased Payment and IAS 26 Accounting and Reporting by Retirement Benefit Plans).
- Contractual rights or contractual obligations contingent on the future use of, or right to use, a non-financial item (for example, some licence fees, royalties, variable and other contingent lease payments and similar items (these are accounted for under IFRS 15, IFRS 16 <u>Leases</u> - and IAS 38).
- Residual value guarantees provided by the manufacturer, dealer or retailer and lessees' residual value guarantees embedded in a lease (they are accounted for under IFRS 15 and IFRS 16). However, stand-alone residual value guarantees that transfer insurance risk are not addressed by other IFRSs and are within the scope of IFRS 17.¹²
- Financial guarantee contracts, unless the issuer has previously asserted explicitly that it regards such contracts as insurance contracts and has used accounting applicable to insurance contracts (see 2.3.1.B below).
- Contingent consideration payable or receivable in a business combination. Contingent consideration in a business combination is required to be recognised at fair value at the acquisition date with subsequent remeasurements of non-equity consideration included in profit or loss.¹³
- Insurance contracts in which the entity is the policyholder, unless those contracts are reinsurance contracts held (see 2.3.1.C below)

¹¹ IFRS 17.7.

¹² IFRS 17.BC87(d).

¹³ IFRS 3.58.

 Credit card contracts (or similar contracts) that provide insurance coverage (see 2.3.1.D below).

The main scope exclusions are discussed below.

2.3.1.A. Product warranties

Warranties provided by a manufacturer, dealer or retailer in connection with the sale of its goods or services to a customer are outside the scope of IFRS 17.¹⁴ Such warranties might provide a customer with assurance that the related product will function as the parties intended because it complies with agreed-upon specifications (called 'assurance-type warranties'), or they might provide the customer with a service in addition to the assurance that the product complies with agreed-upon specifications (called 'service-type warranties').¹⁵ Paragraphs B28 to B33 of IFRS 15 set out the accounting treatment for these two types of warranties.

Without this exception, many product warranties would have been covered by IFRS 17 as they would normally meet the definition of an insurance contract. The Basis for Conclusions observes that the IASB has excluded them from the scope of IFRS 17 because if the standard were to apply, entities would generally apply the premium allocation approach to such contracts, which would result in accounting similar to that which would result from applying IFRS 15. Further, in the Board's view, accounting for such contracts in the same way as other contracts with customers would provide comparable information for the users of financial statements for the entities that issue such contracts. Hence, the Board concluded that changing the existing accounting for these contracts would impose costs and disruption for no significant benefit.¹⁶

Conversely, a product warranty is within the scope of IFRS 17 if it is not issued by a manufacturer, dealer or retailer in connection with the sale of its goods or services to a customer. See 5.3. below.

Other types of warranty are not specifically excluded from the scope of IFRS 17.

How we see it

- A product warranty is within the scope of IFRS 17 if it is not issued by a manufacturer, dealer or retailer in connection with the sale of its goods or services to a customer. Other types of warranties are not specifically excluded from the scope of IFRS 17. A warranty issued by a vendor to the purchaser of a business (e.g., for contingent liabilities related to tax computations of the acquired entity) is an example of a transaction that may fall within the scope of this standard.
- IFRS 17 excludes residual value guarantees provided by a manufacturer, dealer or retailer, which were in the scope of IFRS 4. This change brings residual value guarantees into line with product warranties by enabling manufacturers, dealers and retailers to apply IFRS 15 and IAS 37 and

¹⁴ IFRS 17.7(a).

¹⁵ IFRS 17.BC89; IFRS 15.B28.

¹⁶ IFRS 17.BC90.

to avoid some of the complexities of the IFRS 17 general model, such as the contractual service margin accounting.

2.3.1.B. Financial guarantee contracts

A financial guarantee contract is defined as a contract that requires the issuer to make specified payments to reimburse the holder for a loss it incurs because a specified debtor fails to make payment when due in accordance with the original or modified terms of a debt instrument.¹⁷ These contracts transfer credit risk and may have various legal forms, such as a guarantee, some types of letter of credit, a credit default contract or an insurance contract.¹⁸

Financial guarantee contracts are excluded from the scope of IFRS 17 unless the issuer has previously asserted explicitly that it regards such contracts as insurance contracts and has used accounting applicable to insurance contracts. If so, the issuer may elect to apply either IFRS 17 or IAS 32, IFRS 7 and IFRS 9 to the financial guarantee contracts. The issuer may make that choice contract by contract, but the choice for each contract is irrevocable.¹⁹

It is observed in the Basis for Conclusions that some credit-related contracts lack the precondition for payment that the holder has suffered a loss. One example of such a contract is one that requires payments in response to changes in a specified credit rating or credit index. The Board concluded that those contracts are derivatives and do not meet the definition of an insurance contract. Therefore, such contracts will continue to be accounted for as derivatives under IFRS 9. The Board noted that these contracts were outside the scope of the policy choice in IFRS 4 carried forward into IFRS 17, so continuing to account for them as derivatives would not create further diversity.20

The IASB was concerned that entities other than credit insurers could elect to apply IFRS 4 to financial guarantee contracts and consequently (if their accounting policies permitted) recognise no liability on inception. Consequently, it imposed the restrictions outlined in the previous paragraph.²¹ The application guidance contains further information on these restrictions where it is explained that assertions that an issuer regards contracts as insurance contracts are typically found throughout the issuer's communications with customers and regulators, contracts, business documentation as well as in their financial statements. Furthermore, insurance contracts are often subject to accounting requirements that are distinct from the requirements for other types of transaction, such as contracts issued by banks or commercial companies. In such cases, an issuer's financial statements would typically include a statement that the issuer had used those accounting requirements, i.e. ones normally applied to insurance contracts.²² Nevertheless, other companies do consider it appropriate to apply IFRS 4 rather than IFRS 9 to these contracts.

¹⁷ IFRS 9 Appendix A.

¹⁸ IFRS 17.BC91.

¹⁹ IFRS 17.7(e). ²⁰ IFRS 17.BC94.

²¹ IFRS 9.BCZ2.12.

²² IFRS 9.B2.6.

This accounting policy election is the same as that previously in IFRS 4. The Board decided to carry forward to IFRS 17 the option to account for a financial guarantee contract as if it were an insurance contract, without any substantive changes, because the option has worked in practice and results in consistent accounting for economically similar contracts issued by the same entity. The Board did not view it as a high priority to address the inconsistency that results from accounting for financial guarantee contracts differently depending on the issuer.²³

IFRS 17 does not elaborate on the phrase 'previously asserted explicitly'. However, the application guidance to IFRS 9 states that assertions that an issuer regards contracts as insurance contracts are typically found throughout the issuer's communications with customers and regulators, contracts, business documentation and financial statements. Furthermore, insurance contracts are often subject to accounting requirements that are distinct from the requirements for other types of transaction, such as contracts issued by banks or commercial companies. In such cases, an issuer's financial statements typically include a statement that the issuer has used those accounting requirements.²⁴

Accounting for the revenue associated with financial guarantee contracts issued in connection with the sale of goods is dealt with under IFRS $15.^{25}$

How we see it

- In our view, on transition to IFRS 17, an entity that has previously asserted explicitly that it regards financial guarantee contracts as insurance contracts and has used accounting applicable to insurance contracts may reconsider its previous election regarding accounting for financial guarantee contracts made under IFRS 4 and decide whether it would prefer to account for those contracts under IFRS 17 or IFRS 9. This is because there are no specific transition provisions either within IFRS 17 or IFRS 9 as to whether previous elections made under a different standard, i.e. IFRS 4, should be continued. Hence, IFRS 17 would not prevent an entity from making new elections on application of IFRS 17. However, an entity which had not previously asserted explicitly that it regards such contracts as insurance contracts or which it had not previously used accounting applicable to insurance contracts (i.e. IAS 39 -Financial Instruments: Recognition and Measurement or IFRS 9 accounting was applied under IFRS 4) may not reconsider its previous election (either implicitly or explicitly made).
- It is likely that insurers that have previously issued financial guarantee contracts and accounted for them under an insurance accounting and regulatory framework will meet this requirement. It is unlikely that an entity not subject to an insurance accounting and regulatory framework and existing insurers that had not previously issued financial guarantee contracts would meet this requirement because it would not have previously made the necessary assertions.

²³ IFRS 17.BC93.

²⁴ IFRS 9.B2.6.

²⁵ IFRS 9.B2.5(c).

2.3.1.C. Direct insurance contracts in which the entity is the policyholder

Accounting by policyholders of direct insurance contracts (i.e., those that are not reinsurance contracts) is excluded from the scope of IFRS 17. However, holders of reinsurance contracts (cedants) are required to apply IFRS 17.²⁶

The IASB originally intended to address accounting by policyholders of direct insurance contracts in IFRS 17. The Basis for Conclusions observes that other IFRSs include requirements that may apply to some aspects of contracts in which the entity is the policyholder. For example, IAS 37 *Provisions, Contingent Liabilities and Contingent Assets* sets out the requirements for reimbursements from insurance contracts held that provide cover for expenditure required to settle a provision and IAS 16 *Property, Plant and Equipment* sets out the requirements for some aspects of reimbursement under an insurance contract held that provides coverage for the impairment or loss of property, plant and equipment. Furthermore, IAS 8 *Accounting Policies, Changes in Accounting Estimates and Errors* specifies a hierarchy that an entity should use when developing an accounting policy if no IFRS standard applies specifically to an item. Accordingly, the Board did not view work on policyholder accounting as a high priority.²⁷

2.3.1.D. Credit card contracts (or similar contracts) that provide insurance coverage

Credit card contracts (or similar contracts that provide credit or payment arrangements) that provide services that meet the definition of an insurance contract are excluded from the scope of IFRS 17 if, and only if, the entity does not reflect an assessment of the insurance risk associated with an individual customer in setting the price of the contract with that customer. If excluded from IFRS 17, these contracts would be within the scope of IFRS 9 and other applicable standards. However, if, and only if, the insurance component is a contractual term of such a financial instrument (rather than, say, required by local legislation), IFRS 9 requires an entity to separate and apply IFRS 17 to that insurance component.²⁸

This can be illustrated by the diagram below:

²⁶ IFRS 17.7(g).

²⁷ IFRS 17.BC66.

²⁸ IFRS 17.7(h), IFRS 9.2.1(e)(iv).



An example of a credit card contract (or similar contract) that provides insurance coverage is one in which the entity:

- Must refund the customer for some claims against a supplier in respect of a misrepresentation or breach of the purchase agreement (for example, if the goods are defective or if the supplier fails to deliver the goods) if the supplier does not rectify it
- Is entitled to be indemnified by the supplier for any loss suffered in satisfying its liability with its customer

As a result, the entity and the supplier are jointly and severally liable to the customer, i.e., the customer can choose whether to claim from the entity or from the supplier. In addition, subject to a maximum amount, the customer can claim from the entity or from the supplier an amount in excess of the amount paid using the specific credit card (for example, the entire purchase price, even if only part of the purchase price was paid using the credit card, and any additional costs reasonably incurred as a result of the supplier failure). Normally, the entity does not charge any fee to the customer or charges an annual fee to the customer that does not reflect an assessment of the insurance risk associated with that individual customer.

This scope exclusion was added to IFRS 17 in the June 2020 amendments. The Board noted that IFRS 9 and IFRS 17 both have requirements that address credit risk and insurance risk, which are the prominent features of such contracts. Furthermore, the Board was aware that in applying IFRS 4, which had different criteria for separating components of an insurance contract compared to IFRS 17, most entities separated the components of such contracts. For example, an entity applying IFRS 4 might account for the credit card component applying IFRS 9, the insurance component applying IFRS 4, and any other service components applying IFRS 15. Acknowledging that entities had already identified methods to separate the components of such contracts, the Board concluded that changing the existing accounting for these contracts would impose costs and disruption to entities that typically do not issue contracts in the scope of IFRS 17, other than some credit card contracts and similar contracts that meet the definition of an insurance contract, for no significant benefit.²⁹

In the Board's view, applying IFRS 17 to the insurance coverage components in credit card (or similar) contracts that include insurance coverage as part of the contractual terms will result in the most useful information for users of financial statements. In addition, it will increase comparability between insurance coverage provided as part of the contractual terms of a credit card contract and insurance coverage provided as a separate stand-alone contract. Other IFRS standards, such as IFRS 15 or IAS 37, might apply to other components of the contract, such as service components or insurance components required by law or regulation.³⁰

How we see it

The requirements in IFRS 17 for credit cards or similar arrangements that provide insurance coverage will result in a different accounting treatment depending on the terms and conditions of the arrangement:

- Arrangements wholly accounted for under IFRS 17 notably those where the entity does reflect an assessment of the insurance risk associated with an individual customer in setting the price of the contract with that customer.
- Arrangements wholly accounted for under other standards notably those where entity does not reflect an assessment of the insurance risk associated with an individual customer in setting the price of the contract with that customer, and the insurance coverage is not a contractual term of the instrument.
- Arrangements that are accounted for under other standards with the insurance component separated under IFRS 9 an accounted for under IFRS 17 - notably those where entity does *not* reflect an assessment of the insurance risk associated with an individual customer in setting the price of the contract with that customer, and the insurance coverage is a contractual term of the instrument.

2.3.2. Fixed-fee service contracts

A fixed-fee service contract is one in which the level of service depends on an uncertain event but the fee does not. Examples include roadside assistance programmes and maintenance contracts in which the service provider agrees

²⁹ IFRS 17.BC94B.

³⁰ IFRS 17.BC94C.

to repair specified equipment after a malfunction. Such contracts can meet the definition of an insurance contract because:³¹

- It is uncertain whether, or when, assistance or a repair will be needed
- The owner is adversely affected by the occurrence
- The service provider compensates the owner if assistance or repair is needed.

Although they may meet the definition of insurance contracts, their primary purpose is to provide services for a fixed fee. IFRS 17 permits entities a choice of applying IFRS 15 instead of IFRS 17 to such contracts that it issues if, and only if, they meet specified conditions. The entity may make that choice contract by contract, but the choice for each contract is irrevocable. The conditions are:³²

- The entity does not reflect an assessment of the risk associated with an individual customer in setting the price of the contract with that customer.
- The contract compensates the customer by providing services, rather than by making cash payments to the customer.
- Insurance risk transferred by the contract arises primarily from the customer's use of services, rather than from uncertainty over the cost of those services.

The Board had proposed originally to exclude fixed fee service contracts whose primary purpose is the provision of services from the scope of IFRS 17. However, some stakeholders noted that some entities issue both fixed-fee service contracts and other insurance contracts. For example, some entities issue both roadside assistance contracts and insurance contracts for damage arising from accidents. Therefore, the Board decided to allow entities a choice of whether to apply IFRS 15 or IFRS 17 to fixed-fee service contracts to enable such entities to account for both types of contract in the same way. In the view of the Board, if IFRS 17 is applied to fixed-fee service contracts, entities would generally apply the premium allocation approach (see 9 below) to such contracts which would result in accounting similar to that resulting from applying IFRS 15.³³

How we see it

- The Basis for Conclusions mentions that the choice of whether to apply IFRS 15 or IFRS 17 was introduced to assist entities that issue both roadside assistance contracts and insurance contracts in being able to apply IFRS 17 to all the contracts that is issues. However, it is possible that other types of fixed-fee service contracts are now within the scope of IFRS 17 as the choice between IFRS 15 and IFRS 17 is only available where the specified conditions are met.
- Whether an individual risk assessment is present or not may require the exercise of judgement. In many cases, service agreements are priced to reflect some form of risk assessment. If an entity charges

³¹ IFRS 17.BC95.

³² IFRS 17.8.

³³ IFRS 17.BC96, BC97.

each policyholder the same fee to service the same asset ('community priced'), then the risk assessment is performed at a portfolio level rather than the individual customer level. However, if the fixed fee for servicing is based on the specific condition of the asset (for example, the age or type of motor vehicle) and/or the policyholder (for example, claims history), this would be indicators of an individual risk assessment that reflects the nature of an insurance contract rather than a service contract.

The accounting policy choice between applying IFRS 17 or IFRS 15 applies to fixed-fee service contracts. IFRS 17 does not mention contracts that are priced depending on the level of service. When an entity charges a fee which varies with the level of service provided (e.g., an elevator service contract that levies a fee per breakdown according to the work required), then the contract is unlikely to have significant insurance risk and this would be a service contract within the scope of IFRS 15.

2.3.3. Loan contracts that transfer significant insurance risk only on settlement of the policyholder's obligation created by the contract

Some contracts meet the definition of an insurance contract, but limit the compensation for insured events to the amount otherwise required to settle the policyholder's obligation created by the contract (for example, loans with death waivers). An entity may choose to apply either IFRS 17 or IFRS 9 to such contracts that it issues unless such contracts are excluded from the scope of IFRS 17 (see 2.3.1. above). The entity must make that choice for each portfolio (see 6.1 below) of insurance contracts, and the choice for each portfolio is irrevocable. [IFRS 17.8A].

Examples of such contracts are:

- Mortgages when the outstanding balance of the mortgage is waived if the borrower dies.
- Lifetime mortgages (sometimes called equity release mortgages) where the entity's recourse is limited to the mortgaged property. If the property is sold for less than the mortgage balance (when the customer dies or moves into long-term care) then the loss is borne by the entity.
- Student loan contracts where repayments are income and/or life contingent and may not be made at all if the borrower's income never exceeds the repayment threshold or the borrower dies.
- A loan provided to a customer to buy a non-financial asset which is repaid via low installments over the period of the loan with a final, higher 'balloon' payment at maturity, but where the customer can choose to return the nonfinancial asset to the entity instead of making the 'balloon' payment. If the contract compensates the customer only for changes in market prices and not for changes in the condition of the customer's non-financial asset, then it would not provide insurance coverage and meet the definition of a derivative within the scope of IFRS 9.

This accounting policy choice was added to IFRS 17 by the June 2020 amendments. This was a result of stakeholder concerns that such contracts

are typically issued by non-insurers who might be expected to be in a less advanced stage of IFRS 17 implementation and might not have fully assessed the implications of IFRS 17 on their business, and because these contracts do not usually have the legal form of insurance contracts. It is observed in the Basis for Conclusions that applying either IFRS 17 or IFRS 9 would provide useful information about such contracts. Hence, the Board concluded that requiring an entity to apply IFRS 17 to those contracts, when the entity had previously been applying an accounting policy consistent with IFRS 9 or IAS 39 to those contracts (or vice versa), could impose costs and disruption with no significant benefit.³⁴

It is further observed in the Basis for Conclusions that the accounting policy choice for each portfolio was made irrevocable in order to mitigate the lack of comparability that might otherwise arise between similar contracts issued by the same entity, and between similar contracts issued by different entities.³⁵

How we see it

While the definition of an insurance contract has not changed much from IFRS 4, the consequences of a contract qualifying as an insurance contract have changed. IFRS 4 allowed entities to use their previous accounting policies for items that gualified as insurance contracts. Many non-insurance entities applied guidance from other IFRS standards (e.g., IAS 39 Financial Instruments: Classification and Measurement/ IFRS 9 Financial Instruments or IFRS 15 Revenue from Contracts with *Customers*). Banks and service companies issuing contracts within the scope of IFRS 4 applied accounting treatments that were like those applied to other non-insurance contracts. Many of these contracts also fall within IFRS 17. Since IFRS 17 has specific recognition, measurement and presentation requirements for financial statements, these entities will not be able to continue with these practices and will have to apply the requirements of IFRS 17 instead. Examples of the contracts issued by noninsurers that may meet the definition of insurance contracts include loans with a waiver upon the death of the borrower and service contracts with a fixed fee. However, some scope exemptions and accounting policy choices may apply (see Section 2.3 below). The effect of applying IFRS 17 to such contracts could be significant for non-insurance entities.

2.3.4. Other accounting standards which affect insurers

IFRS 17 does not address other aspects of accounting by insurers, such as accounting for financial assets held by insurers and financial liabilities issued by insurers which are within the scope of IFRS 7, IFRS 9 and IAS 32. However:

 IFRS 9 permits an entity that operates an investment fund that provides investors with benefits determined by units in that fund and recognises liabilities for the amounts to be paid to those investors (e.g. some insurance

³⁴ IFRS 17.BC94E.

³⁵ IFRS 17.BC94F.

contracts with direct participation features and some investment contracts with discretionary participation features) to elect not to derecognise any underlying items held by the funds that include the entity's own financial liabilities. Normally, if an entity issues a financial liability, for example a corporate bond, that is purchased by one of its investment funds, or included within the underlying items behind the insurance contracts that are held on the entity's balance sheet, such a purchase should result in derecognition of the financial liability. This election is irrevocable and made on an instrument-by-instrument basis.³⁶

IAS 40 - Investment Property - permits an entity to separately choose between the fair value model or the cost model for all investment property backing liabilities that pay a return linked directly to the fair value of, or returns from, specified assets including that investment property (e.g. insurance contracts with direct participation features as discussed at 11.3 below).³⁷ The choice to use either the fair value model or the cost model for all other investment property is a separate election.

 ³⁶ IFRS 9.3.3.5.
 ³⁷ IAS 40.32A.

3. The definition of an insurance contract

3.1. The definition

The definition of an insurance contract in IFRS 17 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'.³⁸

This definition determines which contracts are within the scope of IFRS 17 as opposed to other standards.



The definition of an insurance contract is, in essence, the same as in IFRS 4. Therefore, in many cases, contracts that were insurance contracts under IFRS 4 are expected to be insurance contracts under IFRS 17 although IFRS 17 contains no transitional provisions which 'grandfather' conclusions made under IFRS 4 (except for the consequential amendments to IFRS 3 *Business Combinations* - see 14 below).

However, there have been clarifications to the related application guidance explaining the definition to require that:³⁹

- An insurer should consider the time value of money in assessing whether the additional benefits payable in any scenario are significant (see 3.5 below)
- A contract does not transfer significant insurance risk if there is no scenario with commercial substance in which the insurer can suffer a loss on a present value basis (see 3.5 below)

Both of these clarifications are intended to ensure that the determination of insurance risk is made on a present value basis as it was considered that IFRS 4 was unclear on the matter. Additionally, the definition of significant insurance risk (see 3.5 below) uses the word 'amounts' instead of 'benefits' in order to

³⁸ IFRS 17 Appendix A.

³⁹ IFRS 17.BC67.

capture payments that may not necessarily be payable to policyholders (for example claim handling expenses).

An entity should consider its substantive rights and obligations, whether they arise from a contract, law or regulation, when applying IFRS 17. A contract is an agreement between two or more parties that creates enforceable rights and obligations. Enforceability of the rights and obligations in a contract is a matter of law. Contracts can be written, oral or implied by an entity's customary business practices. Contractual terms include all terms in a contract, explicit or implied, but an entity should disregard terms that have no commercial substance (i.e., no discernible effect on the economics of the contract). Implied terms in a contract include those imposed by law or regulation. The practices and processes for establishing contracts with customers vary across legal jurisdictions, industries and entities. In addition, they may vary within an entity (for example, they may depend on the class of customer or the nature of the promised goods or services).⁴⁰ The Basis for Conclusions observes that these considerations are consistent with IFRS 15 and apply when an entity classifies a contract and when it assesses the substantive rights and obligations for determining the boundary of a contract.⁴¹

The definition of an insurance contract is discussed in more detail, as follows:⁴²

- Uncertain future events (see 3.2 below)
- Payments in kind (see 3.3 below)
- The distinction between insurance risk and other risks (see 3.4 below)
- Significant insurance risk (see 3.5 below)
- Changes in the level of insurance risk (see 3.6 below)
- Examples of insurance and non-insurance contracts (see 3.7 below)

Frequently asked questions

Question 3-1: Would IFRS 17 apply to, among others, service contracts including a form of EBITDA guarantee? [TRG meeting September 2018 – Agenda paper no. 11, Log S33]

The submission described a specific fact pattern of an entity that provides hotel management services. The service fee that the entity charges is determined as a percentage of gross hotel revenue. The entity also guarantees the hotel owner a specified level of EBITDA. To the extent that the actual hotel EBITDA is below the specified level, the entity is obligated to make payments to the hotel owner. The amount payable under the guarantee may exceed the amount of the service fee receivable. The submission asks whether the guarantee provided by the entity is within the scope of IFRS 17.

The IASB Staff noted a contract should be assessed against the definition of an insurance contract and the scope requirements of IFRS 17. The definition of an insurance contract in IFRS 17 is the same as the definition of an insurance contract in IFRS 4, with clarifications to the related

⁴⁰ IFRS 17.2.

⁴¹ IFRS 17.BC69.

⁴² IFRS 17.B2.

Frequently asked questions (cont'd)

guidance in Appendix B of IFRS 4. When assessing whether the contract meets the definition of an insurance contract, an assessment is made as to whether the contract transfers significant insurance risk. When assessing whether an insurance contract is within the scope of IFRS 17, an assessment is made as to whether any of the scope exclusions of IFRS 17 are applicable. IFRS 17 includes a scope exclusion for warranties provided by a manufacturer, dealer or retailer in connection with the sale of its services to a customer and also excludes contractual obligations contingent on the future use of a non-financial item (for example, contingent payments), as stated in paragraph 7 of IFRS 17. (see 2.3.1. above)

The implication from the IASB staff's response is that the EBITDA guarantee is excluded from the scope of IFRS 17 as it is a guarantee given by a retailer in connection with the sale of its services to a customer.

How we see it

While the definition of an insurance contract has not changed much from IFRS 4, the consequences of qualifying as an insurance contract have changed. This is because IFRS 4 allowed entities to use their previous accounting policies for contracts that qualified as insurance contracts. Hence, under IFRS 4, many non-insurance entities, such as banks and service companies, applied guidance from other standards, such as IFRS 9 and IFRS 15, to recognise and measure insurance contracts. This will no longer be possible since IFRS 17 has specific recognition, measurement and presentation requirements for financial statements. As discussed at 2.3.1.D and 2.3.3 above, IFRS 17 has a scope exclusion for certain credit card contracts (or similar contracts) that provide insurance coverage and an accounting policy choice to apply either IFRS 9 or IFRS 17 to loan contracts that transfer significant insurance risk only on settlement of the policyholder's obligation created by the contract.

3.2. Uncertain future events

Uncertainty (or risk) is the essence of an insurance contract. Accordingly, IFRS 17 requires at least one of the following to be uncertain at the inception of an insurance contract:⁴³

- (a) The probability of an insured event occurring
- (b) When the insured event will occur

Or

(c) How much the entity will need to pay if the insured event occurs

⁴³ IFRS 17.B3.

An insured event will be one of the following:

- The discovery of a loss during the term of the contract, even if the loss arises from an event that occurred before the inception of the contract
- A loss that occurs during the term of the contract, even if the resulting loss is discovered after the end of the contract term⁴⁴

Or

The determination of the ultimate cost of a claim which has already occurred but whose financial effect is uncertain⁴⁵

This last type of insured event above arises from 'retroactive' contracts, i.e., those providing insurance coverage against an adverse development of an event which has occurred prior to the policy inception date. An example is a reinsurance contract that covers a direct policyholder against adverse development of claims already reported by policyholders. In those contracts, the insured event is the determination of the ultimate cost of those claims. The implications of this on measurement is discussed at 11.5.2.A below.

3.3. Payments in kind

Some insurance contracts require or permit payments to be made in kind. In such cases, the entity provides goods or services to the policyholder to settle the entity's obligation to compensate the policyholder for insured events. Such contracts are insurance contracts, even though the claims are settled in kind, and are treated the same way as insurance contracts when payment is made directly to the policyholder. For example, some insurers replace a stolen article directly rather than compensating the policyholder for the amount of its loss. Another example is when an entity uses its own hospitals and medical staff to provide medical services covered by the insurance contract.⁴⁶

Although these are insurance contracts, if they meet the conditions for fixed-fee service contracts (see 2.3.2 above) entities can elect to apply either IFRS 15 or IFRS 17.

3.4. The distinction between insurance risk and financial risk

The definition of an insurance contract refers to 'insurance risk' which is defined as 'risk, other than financial risk, transferred from the holder of a contract to the issuer'.⁴⁷

A contract that exposes the reporting entity to financial risk without significant insurance risk is not an insurance contract.⁴⁸ 'Financial risk' is defined as 'the risk of a possible future change in one or more of a specified interest rate, financial instrument price, foreign exchange rate, index of prices or rates, credit

- 44 IFRS 17.B4.
- ⁴⁵ IFRS 17.B5.
- ⁴⁶ IFRS 17.B6.

⁴⁷ IFRS 17 Appendix A.

⁴⁸ IFRS 17.B7.

rating or credit index or other variable, provided in the case of a non-financial variable that variable is not specific to a party to the contract'.⁴⁹

An example of a non-financial variable that is not specific to a party to the contract is an index of earthquake losses in a particular region or an index of temperatures in a particular city. An example of a non-financial variable that is specific to a party to the contract is the occurrence or non-occurrence of a fire that damages or destroys an asset of that party. Furthermore, the risk of changes in the fair value of a non-financial asset is not a financial risk if the fair value reflects changes in the market prices for such assets (i.e., a financial variable) and the condition of a specific non-financial asset held by a party to the contract (i.e., a non-financial variable). For example, if a guarantee of the residual value of a specific car exposes the guarantor to the risk of changes in that car's condition, that risk is insurance risk, not financial risk.⁵⁰ This is illustrated in Illustration 1 below.

Contracts that expose the issuer to both financial risk and significant insurance risk can be insurance contracts. For example, many life insurance contracts guarantee a minimum rate of return to policyholders, creating financial risk, and at the same time promise death benefits that may significantly exceed the policyholder's account balance, creating insurance risk in the form of mortality risk. Such contracts are insurance contracts.⁵¹

Under some contracts, an insured event triggers the payment of an amount linked to a price index. Such contracts are insurance contracts provided that the payment contingent on the insured event could be significant.⁵² This is illustrated in Illustration 2 below.

The definition of an insurance contract requires risk to be transferred from the policyholder to the insurer. This means that the insurer must accept, from the policyholder, a risk to which the policyholder was already exposed. Any new risk created by the contract for the entity or the policyholder is not insurance risk.⁵³

Illustration 1 – Residual value insurance

Entity A issues a contract to Entity B that provides a guarantee of the fair value at a future date of an aircraft (a non-financial asset) held by Entity B. Entity A is not the manufacturer, dealer or retailer of the aircraft and also is not the lessee of the aircraft (residual value guarantees given by a lessee under a lease are within the scope of IFRS 16).

This is an insurance contract (unless changes in the condition of the asset have an insignificant effect on its value). The risk of changes in the fair value of the aircraft is not a financial risk because the fair value reflects not only changes in market prices for similar aircraft but also the condition of the specific asset held.

However, if the contract compensated Entity B only for changes in market prices and not for changes in the condition of Entity B's asset, the contract would be a derivative and within the scope of IFRS 9.

⁴⁹ IFRS 17 Appendix A.

⁵⁰ IFRS 17.B8.

⁵¹ IFRS 17.B9. ⁵² IFRS 17.B10.

Illustration 2 $\,-\,$ Contract with life contingent annuity linked to price index

Entity A issues a life-contingent annuity the value of which is linked to a cost of living index.

The contract is an insurance contract because the payment is triggered by an uncertain future event - the survival of the person who receives the annuity. The link to the price index is a derivative, but it also transfers insurance risk because the number of payments to which the index applies depends on the survival of the annuitant. If the resulting transfer of insurance risk is significant, the derivative meets the definition of an insurance contract in which case it should not be separated from the host contract (see 5.1 below).

How we see it

 Under the general model, insurance finance income or expenses includes the change in the carrying amount of the group of insurance contracts arising from the effect of financial risk and changes in such risk. The effect of, and changes in, financial risk are treated differently to the effect of, and changes in non-financial risks (e.g., insurance risk). It, therefore, becomes important to make a distinction between non-financial risk and financial risk. An example was the subject of a submission to the TRG that asked whether changes in fulfilment cash flows as a result of changes in inflation assumptions should be treated as changes in non-financial risk (and adjust the contractual service margin) or changes in financial risk for contracts measured under the general model (see Question 17-3 below).
 For contracts with direct participation features, a distinction between nonfinancial risk and financial risk is also necessary but this distinction has different consequences in terms of the measurement model (see section 12 below).

3.4.1. Insurable interest

For a contract to be an insurance contract the insured event must have an adverse effect on the policyholder.⁵⁴ In other words, there must be an 'insurable interest'.⁵⁵

The IASB considered whether it should eliminate the notion of insurable interest and replace it with the notion that insurance involves assembling risks into a pool in which they can be managed together.⁵⁶ However, the IASB decided to retain the notion of insurable interest contained in IFRS 4, because without the reference to 'adverse effect', the definition might have captured any prepaid contract to provide services with uncertain costs. In addition, the notion of insurable interest is needed to avoid including gambling in the definition of insurance. Furthermore, the definition of an insurance contract is a principle-

⁵⁴ IFRS 17.B12.

⁵⁵ IFRS 17.BC73.

⁵⁶ IFRS 17.BC74.

based distinction, particularly between insurance contracts and those used for hedging. $^{\rm 57}$

The adverse effect on the policyholder is not limited to an amount equal to the financial impact of the adverse event. So, for example, the definition includes 'new for old' insurance coverage that pays the policyholder an amount that permits the replacement of a used or damaged asset with a new asset. Similarly, the definition does not limit payment under a life insurance contract to the financial loss suffered by a deceased's dependents, nor does it preclude the payment of predetermined amounts to quantify the loss caused by a death or accident.⁵⁸

A contract that requires a payment if a specified uncertain event occurs which does not require an adverse effect on the policyholder as a precondition for payment is not an insurance contract. Such contracts are not insurance contracts even if the holder of the contract uses the contract to mitigate an underlying risk exposure. For example, if the holder of the contract uses a derivative to hedge an underlying financial or non-financial variable correlated with the cash flows from an asset of the entity, the derivative is not conditional on whether the holder is adversely affected by a reduction in the cash flows from the asset. Conversely, the definition of an insurance contract refers to an uncertain future event for which an adverse effect on the policyholder is a contractual precondition for payment. This contractual precondition does not require the insurer to investigate whether the uncertain event actually caused an adverse effect, but it does permit the insurer to deny payment if it is not satisfied that the event caused an adverse effect.⁵⁹

Illustration 3 - Reinsurance contract with 'original loss warranty' clause

Entity A agrees to issue a contract to Entity B to provide reinsurance cover for CU5 m against losses suffered. The insurance losses suffered by Entity B, which are recoverable under the contract, are limited to those arising from events where the industry-wide insured loss exceeds a threshold of CU100 m (sometimes described as an 'original loss warranty'). This means that only losses suffered by Entity B up to CU5 m from events exceeding an industrywide insured loss of CU100 m can be recovered under the contract.

Assuming insurance risk is significant, this is an insurance contract as Entity B can only recover its own insurance claims arising from those events.

If the contract allowed Entity B to claim up to CU5 m every time there was an event with an industry-wide loss exceeding a threshold of CU100 m, regardless of whether Entity B had suffered insurance claims from that event, then this would not be an insurance contract because there would be no insurable interest in the arrangement.

⁵⁷ IFRS 17.BC75.

⁵⁸ IFRS 17.B12.

⁵⁹ IFRS 17.B13.

3.4.2. Lapse, persistency and expense risk

Lapse or persistency risk (the risk that the policyholder will cancel the contract earlier or later than the issuer had expected in pricing the contract) is not insurance risk. This is because the resulting variability in the payment to the policyholder is not contingent on an uncertain future event that adversely affects the policyholder.⁶⁰

Similarly, expense risk (the risk of unexpected increases in the administrative costs incurred by the issuer associated with the servicing of a contract, rather than in the costs associated with insured events) is not insurance risk because an unexpected increase in expenses does not adversely affect the policyholder.⁶¹

Therefore, a contract that exposes an entity to lapse risk, persistency risk or expense risk is not an insurance contract unless it also exposes the entity to significant insurance risk.⁶²

3.4.3. Insurance of non-insurance risks

If the issuer of a contract which does not contain significant insurance risk mitigates the risk of that contract by using a second contract to transfer part of that first contract's risk to another party, this second contract exposes that other party to insurance risk. This is because the policyholder of the second contract (the issuer of the first contract) is subject to an uncertain event that adversely affects it and thus it meets the definition of an insurance contract.⁶³

Illustration 4 – Insurance of non-insurance risks

Entity A agrees to compensate Entity B for losses on a series of contracts issued by Entity B that do not transfer significant insurance risk. These could be investment contracts or, for example, a contract to provide services.

The contract issued by Entity A is an insurance contract if it transfers significant insurance risk from Entity B to Entity A, even if some or all of the underlying individual contracts do not transfer significant insurance risk to Entity B. The contract is a reinsurance contract if any of the underlying contracts issued by Entity B are insurance contracts. Otherwise, the contract is a direct insurance contract.

⁶⁰ IFRS 17.B14.

⁶¹ IFRS 17.B14.

 ⁶² IFRS 17.B15.
 ⁶³ IFRS 17.B15.

3.5. Significant insurance risk

A contract is an insurance contract only if it transfers 'significant insurance risk'. $^{\rm 64}$

Insurance risk is 'significant' if, and only if, an insured event could cause an insurer to pay significant additional amounts in any scenario, excluding scenarios that lack commercial substance (i.e., have no discernible effect on the economics of the transaction). If an insured event could mean significant additional amounts would be payable in scenarios that have commercial substance, this condition 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.⁶⁵

In addition, a contract transfers significant insurance risk only if there is a scenario that has commercial substance in which the issuer has a possibility of a loss on a present value basis. However, even if a reinsurance contract does not expose the issuer to the possibility of a significant loss, that contract is deemed to transfer significant insurance risk if it transfers to the reinsurer substantially all of the insurance risk relating to the reinsured portions of the underlying insurance contracts.⁶⁶

The additional amounts described above are determined on a present value basis. If an insurance contract requires payment when an event with uncertain timing occurs and if the payment is not adjusted for the time value of money, there may be scenarios in which the present value of the payment increases, even if its nominal value is fixed. An example is insurance that provides a fixed death benefit when the policyholder dies, with no expiry date for the cover (often referred to as whole-life insurance for a fixed amount). It is certain that the policyholder will die, but the date of death is uncertain. Payments may be made when an individual policyholder dies earlier than expected. Because those payments are not adjusted for the time value of money, significant insurance risk could exist even if there is no overall loss on the portfolio of contracts. Similarly, contractual terms that delay timely reimbursement to the policyholder can eliminate significant insurance risk. An entity should use the discount rates required as discussed at 9.3 below to determine the present value of the additional amounts.⁶⁷

IFRS 17 does not prohibit a contract from being an insurance contract if there are restrictions on the timing of payments or receipts. However, the existence of restrictions on the timing of payments may mean that the policy does not transfer significant insurance risk if it results in the lack of a scenario that has commercial substance in which the issuer has a possibility of a loss on a present value basis.

- ⁶⁴ IFRS 17.B17.
- ⁶⁵ IFRS 17.B18.

⁶⁶ IFRS 17.B19.

3.5.1. Quantity of insurance risk

No quantitative guidance supports the determination of 'significant' in IFRS 17. This was a deliberate decision because the IASB considered that if quantitative guidance was provided, it would create an arbitrary dividing line that would result in different accounting treatments for similar transactions that fall marginally on different sides of that line and would, therefore, create opportunities for accounting arbitrage.⁶⁸

The IASB also rejected defining the significance of insurance risk by reference to the definition of materiality within the Conceptual Framework for Financial Reporting because, in its opinion, a single contract, or even a single book of similar contracts, would rarely generate a loss that would be material to the financial statements as a whole. Consequently, IFRS 17 defines the significance of insurance risk in relation to individual contracts (see 3.5.2 below).⁶⁹

The IASB also rejected the notion of defining the significance of insurance risk by expressing the expected (probability weighted) average of the present values of the adverse outcomes as a proportion of the expected present value of all outcomes, or as a proportion of the premium. This definition would mean that a contract could start as a financial liability and become an insurance contract as time passes or probabilities are reassessed. This idea would have required the constant monitoring of contracts over their life to see whether they continued to transfer insurance risk. The IASB considered that it would be too burdensome to require an entity to continuously monitor whether a contract meets the definition of an insurance contract over its duration. Consequently, as discussed at 3.6 below, an assessment of whether significant insurance risk has been transferred is normally required only at the inception of a contract.⁷⁰

IFRS 4 contained an illustrative example which implied that insured benefits must be greater than 101% of the benefits payable if the insured event did not occur for there to be insurance risk in an insurance contract.⁷¹ However, no equivalent example has been included in IFRS 17.

Some jurisdictions have their own guidance as to what constitutes significant insurance risk. However, other jurisdictions offer no quantitative guidance. Some US GAAP practitioners apply a guideline that a reasonable possibility of a significant loss is a 10% probability of a 10% loss, although this guideline does not appear in US GAAP itself.⁷² It is not disputed in the Basis for Conclusions that a 10% chance of a 10% loss results in a transfer of significant insurance risk and, indeed, the words 'extremely unlikely' and 'a small proportion' (see 3.5 above) suggests that the IASB envisages that significant insurance risk could exist at a lower threshold than a 10% probability of a 10% loss.

- ⁶⁸ IFRS 17.BC78.
- ⁶⁹ IFRS 17.BC79.
- ⁷⁰ IFRS 17.BC80.
 ⁷¹ IFRS 4.IG2.E1.3.
- ⁷² IFRS 17.BC77.
- A closer look at the new Insurance Contracts standard, June 2021

How we see it

- The lack of a quantitative definition of significant insurance risk means that insurers must apply their own judgement as to what constitutes significant insurance risk. Although the IASB did not want to create an 'arbitrary dividing line', the practical impact of this lack of guidance is that insurers have to apply their own criteria to determine what constitutes significant insurance risk and there will probably be diversity in practice as to what these dividing lines are, at least at the margins.
- There is no specific requirement under IFRS 17 for insurers to disclose any thresholds used in determining whether a contract contains significant insurance risk. However, IFRS 17 requires an entity to disclose the significant judgements made in applying IFRS 17 (see 16.3 below) whilst IAS 1 Presentation of Financial Statements requires an entity to disclose the judgements that management has made in the process of applying the entity's accounting policies that have the most significant effect on the amounts recognised in the financial statements.

3.5.2. The level at which significant insurance risk is assessed

Significant insurance risk must be assessed by individual contract, rather than by portfolios or groups of contracts or by reference to materiality to the financial statements. Thus, insurance risk may be significant even if there is a minimal probability of significant losses for a portfolio or group of contracts.⁷³ There is no exception to the requirement for assessment at an individual contract level, unlike IFRS 4 which permitted an insurer to make an assessment based on a small book of contracts if those contracts were relatively homogeneous.

The IASB decided to define significant insurance risk in relation to a single contract rather than at a higher level of aggregation because, although contracts are usually managed on a portfolio basis, the contractual rights and obligations arise from individual contracts. Materiality by reference to the financial statements was considered an inappropriate basis to define significant insurance risk because a single contract, or even a single book of similar contracts, would rarely generate a material loss in relation to the financial statements as a whole.

See section 4 below on when it may be necessary to combine a set or series of contracts as a whole to report the substance.

If an insurance contract is separated into non-insurance components and insurance components (see 5 below) IFRS 17 is applied only to the remaining components of the host insurance contract.⁷⁴

⁷³ IFRS 17.B22.

⁷⁴ IFRS 17.13.

3.5.2.A. Self insurance

An insurer can accept significant insurance risk from a policyholder only if it issues an insurance contract to an entity separate from itself. Therefore, 'self-insurance', such as a self-insured deductible where the insured cannot claim for losses below the excess limit of an insurance policy, is not insurance because there is no insurance contract with a third party.⁷⁵ Accounting for self-insurance and related provisions is covered by IAS 37 which requires that a provision is recognised only if there is a present obligation as a result of a past event, if it is probable that an outflow of resources will occur and a reliable estimate can be determined.⁷⁶

3.5.2.B. A mutual insurer

A mutual insurer accepts risk from each policyholder and pools that risk. Although policyholders bear the pooled risk collectively in their capacity as owners, the mutual has still accepted the risk that is the essence of an insurance contract and therefore IFRS 17 applies to those contracts.⁷⁷ Accounting for insurance contracts issued by mutual entities is discussed at 12.1 below.

3.5.2.C. Intragroup insurance contracts

Where there are insurance contracts between entities in the same group, these would be eliminated in the consolidated financial statements as required by IFRS 10 *Consolidated Financial Statements*. If any intragroup insurance contract is reinsured with a third party that is not part of the group, this third-party reinsurance contract must be accounted for as a direct insurance contract in the consolidated financial statements of a non-insurer because the intragroup contract will be eliminated on consolidation. This residual direct insurance contract (i.e., the policy with the third party) is outside the scope of IFRS 17 from the viewpoint of the consolidated financial statements of a non-insurer because policyholder accounting is excluded from IFRS 17 as discussed at 2.3.1.C above.

3.5.3. Significant additional amounts

The 'significant additional amounts' described at 3.5 above refer to the present value of amounts that exceed those that would be payable if no insured event occurred (excluding scenarios that lack commercial substance). These additional amounts include claims handling and claims assessment costs, but exclude:⁷⁸

The loss of the ability to charge the policyholder for future service. For example, in an investment-linked life contract, the death of the policyholder means that the entity can no longer perform investment management services and collect a fee for doing so. However, the economic loss for the entity does not result from insurance risk. Consequently, the potential loss or future investment management fees are not relevant when assessing how much insurance risk is transferred by a contract

⁷⁵ IFRS 17.B27(c).

⁷⁶ IAS 37.14.

⁷⁷ IFRS 17.B16.

⁷⁸ IFRS 17.B21.

- The waiver on death of charges that would be made on cancellation or surrender of the contract. Because the contract brought these charges into existence, their waiver does not compensate the policyholder for a pre-existing risk. Hence, they are not relevant in determining how much insurance risk is transferred by a contract
- A payment conditional on an event that does not cause a significant loss to the holder of the contract. For example, where the issuer must pay CU1 m if an asset suffers physical damage causing an insignificant economic loss of CU1 to the holder. The holder, in this case, has transferred to the insurer the insignificant insurance risk of losing CU1. At the same time, the contract creates non-insurance risk that the issuer will need to pay an additional CU999,999 if the specified event occurs. Because there is no scenario in which an insured event causes a significant loss to the holder of the contract, the issuer does not accept significant insurance risk from the holder and this contract is not an insurance contract
- Possible reinsurance recoveries the insurer must account for these separately

It follows from this that if a contract pays a death benefit exceeding the amount payable on survival (excluding any waiver or surrender charges mentioned above), the contract is an insurance contract unless the additional death benefit is insignificant (judged by reference to the contract rather than to an entire portfolio of contracts). Similarly, an annuity contract that pays out regular sums for the rest of a policyholder's life is an insurance contract, unless the aggregate life-contingent payments are insignificant. In this case, the insurer could suffer a significant loss on an individual contract if the annuitant survives longer than expected.⁷⁹

Frequently asked questions

Question 3-2: Is the risk related to a premium waiver provision a preexisting risk of the policyholder transferred to the entity by the contract and therefore an insurance risk, or a new risk created by the contract? [TRG meeting September 2018 – Agenda paper no. 07, Log S78]

The TRG members considered a submission which discussed whether a contract that contains a provision that waives the payment of a premium under certain circumstances is an insurance contract. In such cases, the main insured event in the contract differs from the event triggering a premium waiver. For example, the primary coverage may be a term life contract covering mortality risk and premiums are waived if the policyholder has been disabled for six consecutive months, although the policyholder continues to receive the benefits originally promised under the insurance contract despite the waiver of premiums. The TRG members agreed with the IASB staff analysis and observed that:

 There is an insurance risk when an entity provides a waiver of premiums if a specified event occurs

⁷⁹ IFRS 17.B23.

Frequently asked questions (cont'd)

The waiver of premiums differs from the situations discussed above (i.e., the economic loss of the ability to charge the policyholder for future service and the waiver, on death, of contract surrender or cancellation charges).

This is because the risk of the events giving rise to the waiver exists before the contract is issued. It is not a risk created by the contract and the contract does not increase the potential adverse effects. In addition, the events that trigger a waiver are contractual pre-conditions without which the entity can deny the waiver.

The TRG members observed that the consequences of such a waiver of premiums are:

The inclusion of a clause in an investment contract in which premiums are waived by contractual pre-conditions makes the investment contract an insurance contract

The inclusion of such a waiver in a contract that would also be an insurance contract without the waiver, would impact the quantity of benefits provided by the contract and therefore the coverage period, affecting the recognition of the contractual service margin in profit or loss.

Question 3-3: Should an entity exclude from revenue premiums waived as a result of an insured event or should it account for them as part of insurance service expense (i.e. an incurred claim)? [TRG meeting February 2019 – Agenda paper no. 02, Log S117]

The IASB staff clarified, and the TRG agreed, that, to the extent that a premium waiver results from an insured event, it is a claim and, therefore, recognised as an insurance service expense.

How we see it

Section 3.5.2.C discusses intragroup insurance contracts. Reporting entities could consider practical approaches to deal with intragroup contracts. In doing so, entities should be aware of the consequences to the financial statement prepared under IFRS, other than the consolidated financial statements, e.g., separate financial statements or individual financial statements of, for example, the subsidiary. For example, a subsidiary may have to perform another measurement of its insurance liabilities for the purpose of its own IFRS financial statements.

3.6. Changes in the level of insurance risk

IFRS 17 requires the assessment of whether a contract transfers significant insurance risk to be made only once. The Basis for Conclusions states that this assessment is made 'at inception'.⁸⁰ We interpret this phrase to mean that

⁸⁰ IFRS 17.BC80.
the assessment is made when the contract is issued rather than the start of the coverage period since a contract can be recognised at an earlier date than the start of the coverage period (see 7 below).

As the assessment of significant insurance risk is made only once, a contract that qualifies as an insurance contract remains an insurance contract until all rights and obligations are extinguished, i.e., discharged, cancelled or expired, unless the contract is derecognised because of a modification (see 13 below).⁸¹ This applies even if circumstances have changed such that insurance contingent rights and obligations have expired. The IASB considered that requiring insurers to set up systems to continually assess whether contracts continue to transfer significant insurance risk imposed a cost that far outweighed the benefit that would be gained from going through the exercise.⁸² For a contract acquired in a business combination or transfer, the assessment of whether the contract transfer significant insurance risk is made at the date of acquisition or transfer (see 14 below).

For some contracts, the transfer of insurance risk to the issuer occurs after a period.⁸³

Frequently asked questions

Question 3-4: How should the exercise of an option to convert a contract to a different type of contract should be treated? [TRG meeting April 2019 – Agenda paper no. 02, Log S107]

The submission asked how a contract which transfers insurance risk after a period of time, as discussed in paragraph B24 of IFRS 17, should be classified. The Staff analysis explained that for a contract to meet the definition of an insurance contract, there needs to be a transfer of significant insurance risk. Paragraph B24 of IFRS 17 explains that contracts that transfer insurance risk only after an option is exercised do not meet the definition of insurance contracts at inception. An entity should consider the requirements of other IFRS Standards in order to account for such contracts until they become insurance contracts. A contract which only transfers insurance risk after a period of time is different from an insurance contract that provides an option to add further insurance coverage, discussed in Agenda Paper 3 of the May 2018 TRG meeting.

Some stakeholders suggested to the IASB that a contract should not be accounted for as an insurance contract if the insurance-contingent rights and obligations expire after a very short time. IFRS 17 addresses aspects of this by requiring that scenarios that lack commercial substance are ignored in the assessment of significant insurance risk and stating that there is no significant transfer of insurance risk in some contracts that waive surrender penalties on death (see 3.5.3 above and 11.3.1 below).⁸⁴

⁸¹ IFRS 17.B25.

⁸² IFRS 17.BC80.

⁸³ IFRS 17.B24.

⁸⁴ IFRS 17.BC81.

Illustration 5 – Deferred annuity with policyholder election (the standard provides the following example in IFRS 17.B24)

Entity A issues a deferred annuity contract which provides a specified investment return to the policyholder and includes an option for the policyholder to use the proceeds of the investment on maturity to buy a life-contingent annuity at the same rate that Entity A charges other new annuitants at the time the policyholder exercises that option.

This is not an insurance contract at inception because it does not contain significant insurance risk. Entity A remains free to price the annuity on a basis that reflects the insurance risk that will be transferred to it at that time. Such a contract transfers insurance risk to the issuer only after the option is exercised. Consequently, the cash flows that would occur on the exercise of the option fall outside the boundary of the contract, and before exercise there are no insurance cash flows within the boundary of the contract. Consequently, on inception, the contract is a financial instrument within the scope of IFRS 9.

However, if the contract specifies the annuity rates (or a basis other than market rates for setting the annuity rates), the contract transfers insurance risk to Entity A (the issuer) because Entity A is exposed to the risk that the annuity rates will be unfavourable when the policyholder exercises the option. In that case, the cash flows that would occur when the option is exercised are within the boundary of the contract.

3.7. Examples of insurance and non-insurance contracts

This section contains examples given in IFRS 17 of insurance and non-insurance contracts.

3.7.1. Examples of insurance contracts

The following are examples of contracts that are insurance contracts, if the transfer of insurance risk is significant: 85

- Insurance against theft or damage
- Insurance against product liability, professional liability, civil liability or legal expenses
- Life insurance and prepaid funeral plans (although death is certain, it is uncertain when death will occur or, for some types of life insurance, whether death will occur within the period covered by the insurance)
- Life-contingent annuities and pensions (contracts that provide compensation for the uncertain future event - the survival of the annuitant or pensioner - to assist the annuitant or pensioner in maintaining a given standard of living, which would otherwise be adversely affected by his or her survival)
- Insurance against disability and medical costs

⁸⁵ IFRS 17.B26.

- Surety bonds, fidelity bonds, performance bonds and bid bonds (i.e., contracts that provide compensation if another party fails to perform a contractual obligation, for example an obligation to construct a building)
- Product warranties issued by another party for goods sold by a manufacturer, dealer or retailer are within the scope of IFRS 17. However, as discussed at 2.3.1.A above, product warranties issued directly by a manufacturer, dealer or retailer are outside the scope of IFRS 17 and are instead within the scope of IFRS 15 or IAS 37
- Title insurance (insurance against the discovery of defects in title to land that were not apparent when the insurance contract was issued). In this case, the insured event is the discovery of a defect in the title, not the defect itself
- Travel assistance (compensation in cash or in kind to policyholders for losses suffered in advance of, or during travel)
- Catastrophe bonds that provide for reduced payments of principal, interest or both if a specified event adversely affects the issuer of the bond (unless the specified event does not create significant insurance risk, for example if the event is a change in an interest rate or a foreign exchange rate)
- Insurance swaps and other contracts that require a payment based on changes in climatic, geological and other physical variables that are specific to a party to the contract

These examples are not intended to be an exhaustive list.

The following illustrative examples, based on examples contained previously in IFRS 4, provide further guidance on situations where there is significant insurance risk.

Illustration 6 – Guarantee fund established by contract

A guarantee fund is established by contract. The contract requires all participants to pay contributions to the fund so that it can meet obligations incurred by participants (and, perhaps, others). Participants would typically be from a single industry, e.g., insurance, banking or travel.

The contract that establishes the guarantee fund is an insurance contract.

This example contrasts with Illustration 10 below, where a guarantee fund has been established by law and not by contract.

Illustration 7 – No market value adjustment for maturity benefits

A contract permits the issuer to deduct a market value adjustment (MVA), a charge which varies depending on a market index, from surrender values or death benefits. The contract does not permit the issuer to deduct an MVA for maturity benefits.

The policyholder obtains an additional survival benefit because no MVA is applied at maturity. That benefit is a pure endowment because the insured person receives a payment on survival to a specified date, but beneficiaries receive nothing if the insured person dies before then. If the risk transferred by that benefit is significant, the contract is an insurance contract.

Illustration 8 – No market value adjustment for death benefits

A contract permits the issuer to deduct an MVA from surrender values or maturity payments. The contract does not permit the issuer to deduct an MVA for death benefits.

The policyholder obtains an additional death benefit because no MVA is applied on death. If the risk transferred by that benefit is significant, the contract is an insurance contract.

3.7.2. Examples of transactions that are not insurance contracts

The following are examples of transactions that are not insurance contracts:⁸⁶

- Investment contracts that have the legal form of an insurance contract but do not transfer significant insurance risk to the issuer. For example, life insurance contracts in which the insurer bears no significant mortality or morbidity risk are not insurance contracts. Investment contracts with discretionary participation features do not meet the definition of an insurance contract. However, they are within the scope of IFRS 17 provided they are issued by an entity that also issues insurance contracts (see 12.4 below)
- Contracts that have the legal form of insurance, but return all significant 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. Such contracts are normally financial instruments or service contracts
- Self-insurance, in other words retaining a risk that could have been covered by insurance. See 3.5.2.A above
- Contracts (such as gambling contracts) that require a payment if an unspecified uncertain future event occurs, but do not require, as a contractual precondition for payment, that the event adversely affects the policyholder. However, this does not preclude the specification of a predetermined payout to quantify the loss caused by a specified event such as a death or an accident. See 3.4.1 above
- Derivatives that expose one party to financial risk but not insurance risk, because the derivatives require that party to make payment based solely on the changes in one or more of a specified interest rate, a financial instrument price, a commodity price, a foreign exchange rate, an index of prices or rates, a credit rating or a credit index or other variable, provided that, in the case of a non-financial variable, the variable is not specific to a party to the contract
- Credit-related guarantees that require payments even if the holder has not incurred a loss on the failure of a debtor to make payments when due

⁸⁶ IFRS 17.B27.

- Contracts that require a payment that depends on a climatic, geological or any other physical variable not specific to a party to the contract (commonly described as weather derivatives)
- Contracts that provide for reduced payments of principal, interest or both, that depend on a climatic, geological or any other physical variable that is not specific to a party to the contract (commonly referred to as catastrophe bonds)

An entity should apply other IFRSs, such as IFRS 9 and IFRS 15, to the contracts described above. $^{\rm 87}$

The credit-related guarantees and credit insurance contracts referred to above can have various legal forms, such as that of a guarantee, some types of letters of credit, a credit default contract or an insurance contract. As discussed at 2.3.1.B above, those contracts are insurance contracts if they require the issuer to make specified payments to reimburse the holder for a loss that the holder incurs because a specified debtor fails to make payment when due to the policyholder applying the original or modified terms of a debt instrument. However, such insurance contracts are excluded from the scope of IFRS 17 unless the issuer has previously asserted explicitly that it regards the contracts as insurance contracts and has used accounting applicable to insurance contracts.⁸⁸

Credit-related guarantees and credit insurance contracts that require payment, even if the policyholder has not incurred a loss on the failure of the debtor to make payments when due, are outside the scope of IFRS 17 because they do not transfer significant insurance risk. Such contracts include those that require payment:⁸⁹

 Regardless of whether the counterparty holds the underlying debt instrument

Or

On a change in the credit rating or the credit index, rather than on the failure of a specified debtor to make payments when due

The following examples, based on examples contained previously in IFRS 4, illustrate further situations where IFRS 17 is not applicable.

Illustration 9 – Investment contract linked to asset pool

Entity A issues an investment contract in which payments are contractually linked (with no discretion) to returns on a pool of assets held by the issuer (Entity A).

This contract is within the scope of IFRS 9 because the payments are based on asset returns and there is no transfer of significant insurance risk.

⁸⁷ IFRS 17.B28.

⁸⁸ IFRS 17.B29.

⁸⁹ IFRS 17.B30.

Illustration 10 - Guarantee fund established by law

Guarantee funds established by law exist in many jurisdictions. Typically, they require insurers to contribute funds into a pool in order to pay policyholder claims in the event of insurer insolvencies. They may be funded by periodic (usually annual) levies or by levies only when an insolvency arises. The basis of the funding requirement varies although typically most are based on an insurer's premium income.

The commitment of participants to contribute to the fund is not established by contract so there is no insurance contract. Obligations to guarantee funds are within the scope of IAS 37.

Illustration 11 - Right to recover future premiums

Entity A issues an insurance contract which gives it an enforceable and non-cancellable contractual right to recover all claims paid out of future premiums, with appropriate compensation for the time value of money.

Insurance risk is insignificant because all claims can be recovered from future premiums. Consequently, the insurer cannot suffer a significant loss and the contract is a financial instrument within the scope of IFRS 9.

Illustration 12 – Market value adjustment without death or maturity benefits

A contract permits the issuer to deduct an MVA from surrender payments. The contract does not permit an MVA for death and maturity benefits. The amount payable on death or maturity is the amount originally invested plus interest.

The policyholder obtains an additional benefit because no MVA is applied on death or maturity. However, that benefit does not transfer insurance risk from the policyholder because it is certain that the policyholder will live or die and the amount payable on death or maturity is adjusted for the time value of money. Therefore, the contract is an investment contract because there is no significant insurance risk. This contract combines the two features discussed at 3.7.1 above. When considered separately, these two features transfer insurance risk. However, when combined, they do not transfer insurance risk. Therefore, it is not appropriate to separate this contract into two insurance components. [IFRS 17.9].

If the amount payable on death were not adjusted in full for the time value of money, or were adjusted in some other way, the contract might transfer significant insurance risk.

4. Combining insurance contracts

A set or series of insurance contracts with the same or a related counterparty may achieve, or be designed to achieve, an overall commercial effect. In those circumstances, it may be necessary to treat the set or series of contracts as a whole in order to report the substance of such contracts. For example, if the rights or obligations in one contract do nothing other than entirely negate the rights or obligations of another contract entered into at the same time with the same counterparty, the combined effect is that no rights or obligations exist.⁹⁰ This requirement is intended to prevent entities entering into contracts that individually transfer significant insurance risk, but collectively do not, and accounting for part(s) of what is effectively a single arrangement as (an) insurance contract(s).

Frequently asked questions

Question 3-5: When may it be necessary to treat a set or series of insurance contracts as a whole, applying paragraph 9 of IFRS 17? [TRG meeting May 2018 – Agenda paper no. 01, Log S47]

The TRG members discussed the analysis of an IASB staff paper and observed that:

- A contract with the legal form of a single contract would generally be considered on its own to be a single contract in substance. However, there may be circumstances where a set or series of insurance contracts with the same or a related counterparty reflect a single contract in substance;
- The fact that a set or series of insurance contracts with the same counterparty are entered into at the same time is not, in itself, sufficient to conclude that they achieve, or are designed to achieve, an overall commercial effect. Determining whether it is necessary to treat a set or series of insurance contracts as a single contract involves significant judgement and careful consideration of all relevant facts and circumstances. No single factor is determinative in applying this assessment
- The following considerations might be relevant in assessing whether a set or series of insurance contracts achieve, or are designed to achieve, an overall commercial effect:
 - The rights and obligations are different when looked at together compared to individually. For example, if the rights and obligations of one contract negate the rights and obligations of another contract.
 - The entity is unable to measure one contract without considering the other. This may be the case where there is interdependency between the different risks covered in each contract and the contracts lapse together. When cash flows are interdependent, separating them can be arbitrary.

⁹⁰ IFRS 17.9.

Frequently asked questions (cont'd)

- The existence of a discount, in itself, does not mean that a set or series of contracts achieve an overall commercial effect.
- The TRG members also observed that the principles for combining insurance contracts in paragraph 9 of IFRS 17 are consistent with the principles for separating insurance components from a single contract, as discussed at the February 2018 meeting of the TRG (see 5 below).

Illustration 13 – Combination of insurance contracts

Insurance Company A enters an insurance policy with Insured B. A simultaneously enters a fronting agreement with Captive Insurer C, a related party of Insured B. The purpose of the fronting agreement is to reinsure 100% of the insurance risk from the insurance policy with B. However, A would be legally required to honour the obligations imposed by the insurance policy with B if C failed to indemnify it.

Insurance Company A should consider whether it should combine the insurance policy with Insured B and the reinsurance contract with Captive Insurer C, thereby taking into consideration the factors identified by the TRG (see Question 3-5 above).

How we see it

- Parties are considered to be related for the purpose of combining contracts when they meet the definition of related parties in IAS 24 *Related Party Disclosures*.
- The TRG discussion clarifies that in order for an entity to combine a set or series of insurance contracts, those contracts firstly need to be entered into with the same or a related counterparty. If this requirement is not met, the set or series of insurance contracts cannot be combined under this specific guidance in IFRS 17. If this requirement is met, this fact, in and of itself, is not sufficient to conclude that the set or series of insurance contracts should be combined.
- Determining whether it is necessary to combine a set or series of insurance contracts into a single contract involves significant judgement and careful consideration of all relevant facts and circumstances.
 Examples of facts and circumstance to consider for determining whether the contracts were designed to achieve an overall commercial effect are:
 - Are the two contracts priced as a single risk; or priced in contemplation of the entire transaction?
 - Does the lapse of one contract changes the rights and obligations of the other contract(s)?
 - Does measuring the contracts separately result in one/some of the contract(s) being onerous whereas when measured as a whole the contract is profitable?
 - Do both the direct and ceded policies cover the same underlying insurance risks, and would they be impacted similarly by the underlying insured events?
 - Are the rights and obligations different when looked at together, compared to when looked at individually, for example through a guarantee or indemnification provided to the insurer?
- This guidance on the combination of insurance contracts may impact the accounting for fronting arrangements with related parties (see illustration 13 above):
 - In illustration 13, if the insurance contract is not combined with the reinsurance contract, the two contracts will be accounted for on a gross basis. The liabilities under the insurance policy may consequently not exactly offset the reinsurance asset due to, for example, different measurement models (the insurance contract would be eligible for the premium allocation approach but the reinsurance contract not, or vice versa), contract boundary, coverage period and allowing for the risk of non-performance within the measurement of the reinsurance contract.
 - In illustration 13, if the insurance contract is combined with the reinsurance contract, the single arrangement will be accounted for on a net basis under IFRS 17. However, if the combined arrangement

does not meet the criteria for significant insurance risk transfer, it would not be within the scope of IFRS 17.

In addition to the specific guidance on combining contracts in IFRS 17, it may be necessary to consider whether the reporting entity is acting as an agent or principal in relation to the insurance contract services being provided. Where the entity merely acts as an agent on behalf of the other parties of an arrangement through for example a tripartite arrangement or a series of agreements, it would be necessary to account for the contracts on that basis in order to reflect the economic substance of a set or series of insurance contracts, even if a related party situation is not present. Concluding that an insurance company is acting as an agent is not expected to be common because the entity that holds a reinsurance contract does not normally have a right to reduce the amounts it owes to the underlying policyholder by amounts it expects to receive from the reinsurer, i.e. the entity commonly retains the primary responsibility for fulfilling the insurance contract services to its policyholders. While IFRS 17 does not include specific guidance on how to determine whether an entity is acting as an agent or a principal, IFRS 15 paragraphs B34 to B38 does. Where an entity would act as an agent, the accounting for the contract would be outside of the scope of IFRS 17.

5. Separating components from an insurance contract

Insurance contracts may contain one or more components that would be within the scope of another IFRS if they were separate contracts. Such components may be embedded derivatives, an investment component or a component for services other than insurance contract services.

IFRS 17 requires an insurer to identify and separate components in certain circumstances. When separated, those components must be accounted for under the relevant IFRS instead of under IFRS 17.⁹¹ The IASB considers that accounting for such components separately using other applicable IFRSs makes them more comparable to similar contracts that are issued as separate contracts and allows users of financial statements to better compare the risks undertaken by entities in different businesses or industries.⁹²

Therefore, an insurer should:

- Apply IFRS 9 to determine whether there is an embedded derivative to be bifurcated (i.e., be separated) and, if there is, account for that separate derivative (see 5.1 below)
- Separate from a host insurance contract an investment component if, and only if, that investment component is distinct and apply IFRS 9 to account for the separated component unless it is an investment contract with discretionary participation features (see 5.2 below),⁹³ and then
- Separate from the host insurance contract any promise to transfer to a policyholder distinct goods or services other than insurance contract services applying paragraph 7 of IFRS 15 (see 5.3 below)⁹⁴

After separating the components described above (i.e., distinct non-insurance components), an entity should apply IFRS 17 to all remaining components of the host insurance contract.⁹⁵ The recognition and measurement criteria of IFRS 17 are discussed at 7 and 8 below.

⁹³ IFRS 17.11

⁹¹ IFRS 17.10.

⁹² IFRS 17.BC99.

⁹⁴ IFRS 17.12

⁹⁵ IFRS 17.13

The prohibition of voluntary separation of non-insurance components will have a significant impact on some accounting practices. The diagram below illustrates the approach to separating non-insurance components:



- Accounting under IFRS 17, disaggregation for presentation in statement of profit or loss
- Accounting under IFRS 17

* Disaggregation is the exclusion of a non-distinct investment component from insurance revenue and insurance service expenses.



** Investment contracts with Discretionary Participation Features (DPF) are within the scope of IFRS 17 if the entity that issues them also issues insurance contracts. See sections 2.3 and 14.2.

5.1. Separating embedded derivatives from an insurance contract

An entity applies IFRS 9 to determine whether to separate an embedded derivative from a host insurance contract. An embedded derivative is a component of a hybrid contract that also includes a non-derivative host, meaning that some of the cash flows of the combined instrument vary in a way similar to a stand-alone derivative. An embedded derivative causes some or all of the cash flows that otherwise would be required by the contract to be modified. This is determined according to a specified interest rate, financial instrument price, commodity price, foreign exchange rate, price or rate index, credit rating or index, or other variable, provided that, in the case of a non-financial variable, the variable is not specific to a party to the contract.⁹⁶

IFRS 9 requires separation of an embedded derivative from its host if, and only if: 97

- A separate instrument with the same terms as the embedded feature meets the definition of a derivative within the scope of IFRS 9 (this would not be the case if the embedded derivative is itself an insurance contract within the scope of IFRS 17).
- The economic characteristics and risks of the embedded derivative are not closely related to the economic characteristics and risks of the host insurance contract. According to IFRS 9, a derivative embedded in an insurance contract relates closely to the host insurance contract if the embedded derivative and host insurance contract are so interdependent that an entity cannot measure the embedded derivative separately (without considering the host contract)⁹⁸
- The hybrid contract is not measured at fair value with changes in fair value recognised in profit or loss (i.e., a derivative that is embedded in a financial liability at fair value through profit or loss is not separated).

The diagram below illustrates the embedded derivative decision tree:

⁹⁶ IFRS 9.4.3.1.

⁹⁷ IFRS 9.4.3.3.

⁹⁸ IFRS 9.B4.3.8(h).



The Board believes that accounting separately for some embedded derivatives in insurance contracts:⁹⁹

- Ensures that contractual rights and obligations that create similar risk exposures are treated alike whether or not they are embedded in a nonderivative host contract
- Counters the possibility that entities might seek to avoid the requirement to measure derivatives at fair value by embedding a derivative in a nonderivative host contract

IFRS 4 had previously required IFRS 9 or IAS 39 to be applied to derivatives embedded in a host insurance contract unless the embedded derivative was itself an insurance contract.¹⁰⁰ IFRS 17 no longer includes the statement that such embedded derivative is not within the scope of IFRS 9. However, any derivative that itself is an insurance contract is scoped out by IFRS 9 and, therefore, would not be subject to the embedded derivative separation guidance of IFRS 9 but is accounted for under IFRS 17.¹⁰¹

IFRS 17 has also removed the exception in IFRS 4 which allowed an insurer not to separate and measure at fair value, a policyholder's option to surrender an insurance contract for a fixed amount (or for an amount based on a fixed amount and an interest rate), even if the exercise price differed from the carrying amount of the host insurance liability.¹⁰² Instead, the requirements of IFRS 9 are used to determine whether an entity needs to separate a surrender option.¹⁰³ However, the value of a typical surrender option and the host insurance contract are likely to be interdependent because one component cannot usually be measured without the other. Therefore, these requirements

 ⁹⁹ IFRS 17.BC104.
 ¹⁰⁰ IFRS 4.7.
 ¹⁰¹ IFRS 9.2.1(e)
 ¹⁰² IFRS 4.8.
 ¹⁰³ IFRS 17.BC105(b).

will very often result in not separating the surrender option from the host insurance contract.

A derivative is a financial instrument within the scope of IFRS 9 with all three of the following characteristics: 104

- Its value changes in response to a change in 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 the underlying of the contract
- It requires no initial net investment or an initial net investment that would be smaller than would be required for other types of contracts that would be expected to have a similar response to changes in market factors
- It is settled at a future date

The following are examples of embedded derivatives that may be found in insurance contracts:

- Benefits, such as death benefits, linked to equity prices or an equity index
- Options to take life-contingent annuities at guaranteed rates
- Guarantees of minimum interest rates in determining surrender or maturity values
- Guarantees of minimum annuity payments where the annuity payments are linked to investment returns or asset prices
- A put option for the policyholder to surrender a contract. These can be specified in a schedule, based on the fair value of a pool of interest-bearing securities or based on an equity or commodity price index
- An option to receive a persistency bonus (an enhancement to policyholder benefits for policies that remain in-force for a certain period)
- An industry loss warranty where the loss trigger is an industry loss as opposed to an entity specific loss
- A catastrophe trigger where a trigger is defined as a financial variable such as a drop in a designated stock market
- An inflation index affecting policy deductibles
- Contracts where the currency of claims settlement differs from the currency of loss
- Contracts with fixed foreign currency rates

¹⁰⁴ IFRS 9 Appendix A.

The following example illustrates an embedded derivative in an insurance contract that is not required to be separated and accounted for under IFRS 9.

Illustration 14 - Death or annuity benefit linked to equity prices or index

A contract has a death benefit linked to equity prices or an equity index "that is payable only on death or when annuity payments begin, and not on surrender or maturity."

The equity-index feature meets the definition of an insurance contract (unless the life-contingent payments are insignificant) because the policyholder benefits only when the insured event occurs. Therefore, the derivative and the host insurance contract are interdependent. The embedded derivative is not required to be separated and accounted for under IFRS 9, but remains within the scope of IFRS 17.¹⁰⁵

Illustration 15 – Policyholder option to surrender contract for value based on a market index

An insurance contract gives the policyholder the option to surrender the contract for a surrender value based on an equity or commodity price or index.

The option is not closely related to the host insurance contract because the surrender value is derived from an index and is not interdependent with the insurance contract. Therefore, the surrender option is required to be accounted for under IFRS $9.^{106}$

How we see it

IFRS 17 did not carry forward the exception to separate, and measure at fair value, a policyholder's option to surrender an insurance contract for a fixed amount (or for an amount based on a fixed amount and an interest rate). However, the value of a typical surrender option and the host insurance contract are likely to be interdependent because one component cannot be measured or exist without the other. Therefore, in practice, this change may not result in separation of the surrender option in any case.

¹⁰⁵ IFRS 9.B4.3.8(h).

¹⁰⁶ IFRS 9.B4.3.5(c)-(d).

5.2. Separating investment components from an insurance contract

IFRS 4 referred to the notion of a deposit component.¹⁰⁷ IFRS 17 does not refer to a deposit component, but introduces a new concept called an investment component. An investment component is the amount an insurance contract requires the entity to repay to a policyholder in all circumstances, regardless of whether an insured event occurs. ¹⁰⁸

IFRS 17 requires distinct investment components to be separated from the host insurance contract and accounted for under IFRS 9. Investment components that are not distinct are accounted for under IFRS 17. However, investment components accounted for under IFRS 17 are excluded from the insurance service result (i.e. they are not accounted for as either insurance revenue or insurance service expenses).¹⁰⁹

5.2.1. The definition of an investment component

The definition of investment components was clarified in June 2020, because the explanation of an investment component contained in the Basis for Conclusions was not entirely captured by the original wording of the definition in the standard.

Frequently asked questions

Question 5-1: How to determine whether an insurance contract includes an investment component. [TRG meeting April 2019 – Agenda paper no. 01, Log S85, S90 and S112]

The submissions ask how to:

- Determine whether an insurance contract includes an investment component
- Assess whether an investment component is distinct (see 5.2.2 below)
- Determine the amount of an investment component (see 5.2.3 below)

In determining whether the contract requires the entity to make a payment in all circumstances, the Staff observed that:

- IFRS 17 requires an entity to assess at inception whether an investment component is separated from an insurance contract. To make that assessment, the entity determines whether the contract includes an investment component at inception.
- Different events can trigger a payment to a policyholder under an insurance contract. For example, a payment could be due because the policyholder terminates the contract, an insured event occurs, or the contract reaches its maturity. The insurance contract includes an investment component only if a payment would occur in all circumstances. For example, a non-cancellable contract that requires an entity to pay an amount when the policyholder dies, includes an investment component because the entity is required to pay the amount in all circumstances. The amount to be paid in this case is a claim for a future event that is the death of the policyholder

¹⁰⁷ IFRS 4.10-12, 20D and B28.

¹⁰⁸ IFRS 17 Appendix A.

¹⁰⁹ IFRS 17.85.

Frequently asked questions (cont'd)

(although the timing is uncertain). However, a non-cancellable contract that requires an entity to pay an amount only if the policyholder survives to a specified age but does not require the entity to pay any amount if the policyholder dies before that, does not include an investment component. The amount to be paid in this case is a claim for an insured event, i.e., the survival of the policyholder.

- IFRS 17 states that an entity needs to assess the insurance risk excluding scenarios that have no commercial substance (i.e., no discernible effect on the economics of the transaction). Hence, for the purpose of determining whether an insurance contract includes an investment component, the entity needs to assess whether scenarios in which no payments are made have commercial substance. The entity does not consider a scenario for which no payment is made if that scenario has no commercial substance.
- In some scenarios, the amount of the payment could be zero. However, this does not necessarily mean that no investment component exists. For example, an entity would need to consider whether a scenario in which the amount of payment is zero arises from:
 - A payment that an entity makes to the policyholder early in the coverage period that might reduce the investment component to zero later in the coverage period.
 - The policyholder's decision to use a payment due from the entity to settle amounts due to the entity. This might be the case when the policyholder decides to terminate a contract early in the coverage period and uses a surrender amount to pay surrender charges that are equal to or higher than the surrender amount, or when the policyholder has the option to use a surrender amount to buy insurance coverage, such as an annuity. In the staff's view, the fact that the policyholder chooses to use a payment it is due to fund payments to the entity does not mean the entity is not required to make payments in all circumstances. This is because settling amounts due on a net or gross basis should not affect the outcome of the assessment of whether an investment component exists.
 - A payment amount may be made to a policyholder upon cancellation of a contract that is calibrated to reflect outstanding future periods in which a service is provided. Such a payment may indicate that the policyholder is entitled to a premium refund reflecting its consumption of service over the life of the contract. In this case, the payments may represent a refund of premiums for unused coverage rather than an investment component.

Illustration 16 – Investment component in a life cover contract

In exchange for a single premium of CU1,000 paid by a 60 year-old policyholder, the life cover contract promises to pay an amount of CU2,000 when the policyholder reaches 80 years old or when the policyholder dies before reaching 80 years old. The policyholder cannot terminate the contract.

The life cover contract includes an investment component because the contract requires the insurer to make a payment to the policyholder in all circumstances, i.e. whether the policyholder reaches 80 years old or dies before reaching 80 years old.

Illustration 17 - Investment component in immediate annuity contract

In exchange for premiums, the immediate annuity contract with a guarantee payment period promises to make regular payments to the policyholder for the remainder of the policyholder's life, or the estate of the policyholder for a remaining guaranteed period if the policyholder dies before the end of the guaranteed period (for example, if the guaranteed period is three years and the policyholder dies at the end of Year 1, the estate will continue to receive regular payments for two years). This example assumes that the policyholder cannot terminate the contract.

The immediate annuity contract with a guaranteed payment period includes an investment component. The staff observe that the contract requires the entity to make a payment in all circumstances—i.e. regular payments to the policyholder or to the estate of the policyholder for the guaranteed period.

Illustration 18 – Investment component in deferred annuity contract

The deferred annuity contract promises to pay a surrender amount to the policyholder if the policyholder dies or terminates the contract before reaching 60 years old or, if the policyholder reaches 60 years old, to make regular payments to the policyholder for the remainder of the policyholder's life. In addition, if the policyholder dies before reaching 80 years old, the contract requires the entity to pay an amount at least equal to the amount accumulated to the policyholder through deposits less payments already made. It is assumed that if the policyholder reaches 80 years old, the regular payments received between the ages of 60 years old and 80 years old at least equal the amount accumulated through deposits and the amount accumulated through deposits does not accrue interest after the policyholder reaches 60 years old. The policyholder cannot terminate the contract after reaching 60 years old.

The deferred annuity contract includes an investment component because the contract requires the entity to pay a fixed amount in all circumstances, either a surrender amount if the policyholder dies or terminates the contract before reaching 60 years old or an amount that is equal to the amount accumulated by the policyholder through deposits, if the policyholder dies between the ages of 60 and 80 or reaches 80 years old.

Illustration 19 – Pure protection contract

In exchange for premiums, the pure protection contract promises to pay a fixed amount of CU1,000 to the policyholder on the death of the policyholder, if the policyholder dies within a 5-year coverage period or a variable surrender amount to the policyholder if the policyholder opts to surrender the contract before the end of Year 4. No amount is paid to the policyholder if the policyholder keeps the contract to Year 5 and survives.

The pure protection contract does not contain an investment component because there are circumstances with commercial substance in which no amount is paid.

A contract which does not require a payment to a policyholder if it continues to the end of the coverage period without a claim being made does not contain an investment component. There may be a payment upon surrender but this payment is regardless of whether the insured event occurs. However, because there is no payment on maturity there is a scenario where no payment to the policyholder is made (provided this scenario has commercial substance). Therefore, a pure protection contract does not contain an investment component because there are circumstances with commercial substance in which no amount is paid. The same would apply to a contract where there is no payment upon death before maturity (i.e., a pure endowment contract).

5.2.2. Separable investment components

Many insurance contracts have an implicit or explicit investment component that would, if it were a separable financial instrument, be within the scope of IFRS 9. However, the Board decided that it would be difficult to routinely separate such investment components from insurance contracts.¹¹⁰

Accordingly, IFRS 17 requires an entity to separate from a host insurance contract an investment component if, and only if, that investment component is distinct from the host insurance contract.¹¹¹ The Board concluded that, in all cases, entities would be able to measure the stand-alone value for a separated investment component by applying IFRS 9.¹¹²

The words 'if, and only if' mean that voluntary separation of investment components which are not distinct is prohibited. This is a change from IFRS 4, which permitted voluntary unbundling of deposit components if the deposit component could be measured separately. The Board considered whether to permit an entity to separate a non-insurance component when not required to do so by IFRS 17; for example, some investment components with interrelated cash flows, such as policy loans. Such components may have been separated when applying previous accounting practices. However, the Board concluded that it would not be possible to separate in a non-arbitrary way, a component that is not distinct from the insurance contract nor would such a result be desirable. The Board also noted that when separation ignores interdependencies between insurance and non-insurance components, the sum

¹¹⁰ IFRS 17.BC108.

¹¹¹ IFRS 17.11(b).

¹¹² IFRS 17.BC109.

of the values of the components may not always equal the value of the contract as a whole, even on initial recognition. That would reduce the comparability of the financial statements across entities.¹¹³

An investment component is distinct if both of the following conditions are $met:^{114}$

- The investment component and the insurance component are not highly interrelated
- A contract with equivalent terms is sold, or could be sold, separately in the same market or the same jurisdiction, either by entities that issue insurance contracts or by other parties. The entity should take into account all information reasonably available in making this determination. The entity is not required to undertake an exhaustive search to identify whether an investment component is sold separately. It is not necessary to undertake an exhaustive search to identify whether is sold separately. However, the entity should consider all information that is reasonably available.

An investment component and an insurance component are highly interrelated if: $^{\rm 115}$

- The entity is unable to measure one component without considering the other. For example, if the value of one component varies according to the value of the other, an entity should apply IFRS 17 to account for the combined investment and insurance components.
- The policyholder is unable to benefit from one component unless the other is also present. For example, if the lapse or maturity of one component in a contract causes the lapse or maturity of the other, the entity should apply IFRS 17 to account for the combined investment and insurance components.

Frequently asked questions

Question 5-2: How to determine whether an insurance contract includes an investment component. [TRG meeting April 2019 – Agenda paper no. 01, Log S85, S90 and S112]

The submissions ask how to:

- Determine whether an insurance contract includes an investment component (see 5.2.1 above)
- Assess whether an investment component is distinct
- Determine the amount of an investment component (see 5.2.3 below)

Assessing whether an investment component is distinct, the Staff considered the two criteria in paragraph B31.

TRG members discussed the analysis on assessing whether an investment component is distinct and observed that an investment component within an insurance contract is not distinct if the investment component and the insurance component are highly interrelated, i.e., when:

¹¹³ IFRS 17.BC114.

¹¹⁴ IFRS 17.B31.

¹¹⁵ IFRS 17.B32.

Frequently asked questions (cont'd)

- It is not possible to measure one component without considering the other. This could be the case when the contract requires the entity to make payments for which either the amount or the timing depend on the insured event. Paragraph BC10(a) of the Basis for Conclusions on IFRS 17 explains that ignoring interdependencies between components of an insurance contract would have the result that the sum of the values of the components may not always equal the value of the contract as a whole, even on initial recognition. Thus, if the value of one component varies according to the value of the other component the resulting measurement might not be meaningful for one of (or for both) the components.
- The policyholder cannot benefit from one component if the other is not present. The lapse or maturity of one component causing the lapse or maturity of the other component is sufficient to conclude that the two components are highly interrelated. For example, the lapse of the insurance component causing the lapse of the investment component is sufficient to conclude that the two components are highly interrelated, even if the lapse of the investment component does not cause the lapse of the insurance component. A contractual term preventing the policyholder from cancelling the investment component or the insurance component or both may indicate that the policyholder cannot benefit from one component without the other.

TRG members also observed that the hurdle for separation of investment components from an insurance contract is high.

Illustration 20 – Investment component in a life cover contract

In exchange for a single premium of CU1,000 paid by a 60 year-old policyholder, the life cover contract promises to pay an amount of CU2,000 when the policyholder reaches 80 years old or when the policyholder dies before reaching 80 years old. The policyholder cannot terminate the contract.

The value of the insurance component varies according to the value of the investment component because the insured event in this example is the timing of death. Although the payment of CU2,000 is certain, it is uncertain when the policyholder will die and, therefore whether the entity will pay the amount of CU2,000 before the policyholder reaches 80 years old and how soon that may be after the inception of the contract. Therefore, the entity cannot measure the insurance component without considering the investment component and, as a result, the investment component is not distinct and the entity cannot separate it from the insurance contract.

The IASB staff further observed that the policyholder cannot benefit from one component when the other component is not present because both components lapse together.

Illustration 21 – Investment component in deferred annuity contract

The deferred annuity contract promises to pay a surrender amount to the policyholder if the policyholder dies or terminates the contract before reaching 60 years old or, if the policyholder reaches 60 years old, to make regular payments to the policyholder for the remainder of the policyholder's life. In addition, if the policyholder dies before reaching 80 years old, the contract requires the entity to pay an amount at least equal to the amount accumulated to the policyholder through deposits less payments already made. It is assumed that if the policyholder reaches 80 years old, the regular payments received between the ages of 60 years old and 80 years old at least equal the amount accumulated through deposits and the amount accumulated through deposits does not accrue interest after the policyholder reaches 60 years old. The policyholder cannot terminate the contract after reaching 60 years old.

In this contract the investment component is: (i) a surrender amount if the policyholder dies or terminates the contract before reaching 60 years old; or (ii) an amount that is equal to the amount accumulated by the policyholder through deposits, if the policyholder reaches 60 years old. The insurance component is possible payments exceeding the amount accumulated by the policyholder through deposits.

If the policyholder dies after reaching 60 years old and before reaching 80 years old, the entity makes a payment reflecting the amount accumulated by the policyholder through deposits. The timing of that payment depends on the death of the policyholder. Therefore, the entity cannot measure the investment contract without considering the insurance component. As a result, the investment component is not distinct and the entity cannot separate it from the insurance contract.

The IASB staff also observed that the death of the policyholder causes the maturity of both the insurance component in the contract and the investment component in the contract.

Illustration 22 – Insurance contract with an account balance and a minimum death benefit [Based on example 4 in the Illustrative Examples to IFRS 17, IE43-51]

An entity issues a whole life insurance contract with an account balance. The contract does not have a fixed term. The entity receives a premium of CU1,000 when the contract is issued. The account balance is increased annually by voluntary amounts paid by the policyholder, increased or decreased by amounts calculated using the returns from specified assets and decreased by fees charged by the entity (e.g. asset management fees).

The contract promises to pay the following:

- A death benefit of CU5,000 plus the amount of the account balance if the insured person dies during the coverage period
- The account balance, if the contract is cancelled (i.e., there are no surrender charges).

Illustration 22 – Insurance contract with an account balance and a minimum death benefit [Based on example 4 in the Illustrative Examples to IFRS 17, IE43-51] (cont'd)

The entity has a claims processing department to process the claims received and an asset management department to manage investments. An investment product that has equivalent terms to the account balance, but without the insurance coverage, is sold by another financial institution.

The contract contains an investment component because an amount is paid to the policyholder in all circumstances (i.e., either the account balance if the contract is cancelled or the death benefit plus the account balance if the insured person dies during the coverage period).

The existence of an investment product with equivalent terms indicates that the components may be distinct. However, if the right to provide death benefits provided by the insurance coverage either lapses or matures at the same time as the account balance, the insurance and investment components are highly interrelated and are therefore not distinct. Consequently, the account balance would not be separated from the insurance contract and would be accounted for by applying IFRS 17.

Claims processing activities are part of the activities the entity must undertake to fulfil the contract and the entity does not transfer a good or service to the policyholder because the entity performs those activities. Thus, the entity would not separate the claims processing component from the insurance contract.

Asset management activities, similar to claims processing activities, are part of the activities the entity must undertake to fulfil the contract and the entity does not transfer a good or service other than insurance contract services to the policyholder because the entity performs those activities. Thus, the entity would not separate the asset management component from the insurance contract.

How we see it

- An account balance in a savings-type insurance contract is a clear example of a repayable contract feature that would typically be an investment component There are various other repayable amounts that may also meet the definition of an investment component depending on the applicable circumstances, for example guaranteed annuity payments and no-claim bonuses.
- The requirements in IFRS 17 for separating investment components do not specifically address the issue of contracts artificially separated through the use of side letters, the separate components of which should be considered together. However, IFRS 17 does state that it may be necessary to treat a set or series of contracts as a whole in order to report the substance of such contracts. For example, if the rights or obligations in one contract do nothing other than entirely negate the rights or obligations of another contract entered into at the same time with the same counterparty, the combined effect is that no rights or obligations exist (see 4 above).

Generally, IFRS 4 permitted voluntary separation of non-insurance components in an insurance contract where separation (referred to as "unbundling") is not required. Some entities used this option to voluntarily separate non-insurance components from their host insurance contracts and account for them under other IFRSs, for example, because their previous accounting policies applied under IFRS 4 required the separation of some of these components. In such cases, entities will have to assess whether separation of the non-insurance components is required under IFRS 17. Any such components not requiring mandatory separation will have to be accounted for together with the host insurance contract under IFRS 17.

5.2.3. Measurement of the non-distinct investment component

Although an entity applies IFRS 17 to account for both the combined investment and insurance components of an insurance contract if those components are highly interrelated, insurance revenue and insurance service expenses presented in profit or loss must exclude any non-separated investment component.¹¹⁶

IFRS 17 does not explain how to determine the amount of non-distinct investment components that an entity is required to exclude from insurance revenue and insurance service expense. This issue was discussed at the April 2019 meeting of the TRG.

Frequently asked questions

Question 5-3: How to determine whether an insurance contract includes an investment component. [TRG meeting April 2019 – Agenda paper no. 01, Log S85, S90 and S112]

The submissions ask how to:

- Determine whether an insurance contract includes an investment component (see 5.2.1 above)
- Assess whether an investment component is distinct (see 5.2.2 above)
- Determine the amount of an investment component.

The Staff observed that there could be circumstances in which the investment component is not explicitly identified by the contractual terms or where the amount of the investment component varies over time. The Staff observed that, in these circumstances, an approach for determining the investment component that is based on a present value basis as at the time of making this determination would be consistent with the requirements of paragraph B21 of IFRS 17, which refers to the present value of significant additional amounts that result in a contract being defined as an insurance contract (see 3.5.3 above). The staff consider that if the amounts that would be payable if no insurance event had occurred are

¹¹⁶ IFRS 17.85, BC108(b).

Frequently asked questions (cont'd)

determined on a present value basis, it would be consistent to determine the investment component on a present value basis too.

The TRG members observed that:

- In some cases, it may be reasonable to determine the amount of the investment component that an entity is required to exclude from insurance revenue and insurance service expenses using the explicit amount identified by contractual terms. For example, the amounts of a non-distinct investment component can be identified as an explicit surrender amount or explicit guaranteed payments.
- In other cases, it may be appropriate to determine the amount of the investment component that an entity is required to exclude from insurance revenue and insurance service expenses on a present value basis at the time of making the determination. For example, in an uncancellable contract that requires an entity to pay the policyholder an amount when the policyholder dies or reaches the age of 80 (see Illustration 15 and 18 above), using the present value of the payments the contract requires the entity to make at the age of 80 as the amount of the investment component would result in a reasonable outcome because death in the early periods of coverage would reflect a higher insurance claim than in later periods.

The TRG members also observed that if an entity uses an explicit surrender amount for determining the amounts to be excluded from insurance revenue and insurance service expense, it should not be required to determine whether a part of that amount reflects a premium refund. The TRG members noted that both an investment component and a premium refund will be excluded from revenue and expenses recognised from a contract in these circumstances. In addition, there is no requirement to separately disclose any premium refund from the non-distinct investment component.

How we see it

- It is observed in the Basis for Conclusions that non-distinct investment components need be identified only at the time revenue and incurred claims are recognised, so as to exclude the investment components so identified.¹¹⁷ However, since the contractual service margin in the general model is determined by considering both insurance coverage and investment return service, if any (see 9.7.1 below), an entity may also need to determine whether an insurance contract includes a non-distinct investment component before an incurred claim is recognised.
- Furthermore, the contractual service margin for a group of insurance contracts without direct participation features is adjusted for differences between any investment component expected to become payable in the period (adjusted for the effect of the time value of money and financial risk) and the actual investment component that becomes payable in the period (see 9.6 below). This means the entity would have to be able to determine the differences between any investment component expected to become payable in the period and the actual investment component that becomes payable. ¹¹⁸

5.3. Goods and other than insurance contract services

After applying IFRS 9 to embedded derivatives and separating a distinct investment component from a host insurance contract, an entity is required to separate from the host insurance contract any promise to transfer to a policyholder distinct goods or services other than insurance contract services (i.e., non-insurance services) by applying the requirements of IFRS 15 *Revenue from Contracts with Customers* for a contract that is partially within the scope of IFRS 15 and partially within the scope of other standards.¹¹⁹

This means that, on initial recognition, an entity should:120

- Apply IFRS 15 to attribute the cash inflows between the insurance component and any promises to provide distinct goods or services other than insurance contract services; and
- Attribute the cash outflows between the insurance component and any promised goods or services other than insurance contract services accounted for applying IFRS 15 so that:
- Cash outflows that relate directly to each component are attributed to that component
- Any remaining cash outflows are attributed on a systematic and rational basis, reflecting the cash outflows the entity would expect to arise if that component were a separate contract.

¹¹⁷ IFRS 17.BC34.

¹¹⁸ IFRS 17.B96.

¹¹⁹ IFRS 17.12.

¹²⁰ IFRS 17.12.

The allocation of the cash inflows between the host insurance contract and the distinct good or service other than an insurance contract service should be based on the stand-alone selling price of the components. The Board believes that, in most cases, entities would be able to determine an observable standalone selling price for the bundled goods or services if those components meet the separation criteria.¹²¹ If the stand-alone selling price is not directly observable, an entity would need to estimate the stand-alone selling price of each component to allocate the transaction price. This stand-alone selling price might not be directly observable if the entity does not sell the insurance and the goods or components separately, or if the consideration charged for the two components together differs from the stand-alone selling prices for each component. In this case, applying IFRS 15 results in any discounts and crosssubsidies being allocated to components proportionately or on the basis of observable evidence.¹²² IFRS 17 requires that cash outflows should be allocated to their related component, and that cash outflows not clearly related to one of the components should be systematically and rationally allocated between components. Insurance acquisition cash flows and some fulfilment cash flows relating to overhead costs do not clearly relate to one of the components. A systematic and rational allocation of such cash flows is consistent with the requirements in IFRS 17 for allocating acquisition and fulfilment cash flows that cover more than one group of insurance contracts to the individual groups of contracts, and is also consistent with the requirements in other IFRSs for allocating the costs of production, e.g., the requirements in IFRS 15 and IAS 2 Inventories.¹²³

For the purpose of separation, an entity should not consider activities that it must undertake to fulfil a contract unless the entity transfers a good or service other than insurance contract services to the policyholder as those activities occur. For example, an entity may need to perform various administrative tasks to set up a contract. The performance of those tasks does not transfer a service to the policyholder as the tasks are performed.¹²⁴

A good or service other than an insurance contract service promised to a policyholder is distinct if the policyholder can benefit from the good or service either on its own or together with other resources readily available to the policyholder. Readily available resources are goods or services that are sold separately (by the entity or by another entity), or resources that the policyholder has already got (from the entity or from other transactions or events).¹²⁵

A good or service other than insurance contract service that is promised to the policyholder is not distinct if:¹²⁶

- The cash flows and risks associated with the goods or services are highly interrelated with the cash flows and risks associated with the insurance components in the contract
- The entity provides a significant service in integrating the goods or noninsurance services with the insurance components.

- ¹²³ IFRS 17.BC113.
- ¹²⁴ IFRS 17.B33.

¹²¹ IFRS 17.BC111.

¹²² IFRS 17.BC112.

¹²⁵ IFRS 17.B34.

¹²⁶ IFRS 17.B35.

The Board considered, but rejected, the possibility to separate non-insurance components that are not distinct because it would not be possible to separate, in a non-arbitrary way, a component that is not distinct from the insurance contract nor would such a result be desirable.¹²⁷

Illustration 23 – Separating components from a stop-loss contract with claims processing services [Based on example 5 in the Illustrative Examples to IFRS 17, IE51-55]

An entity issues a stop loss contract to a policyholder (which is an employer). The contract provides health coverage for the policyholder's employees, with these features:

- Insurance coverage of 100% for the aggregate claims from employees exceeding CU25m (the "stop loss" threshold). The employer will selfinsure claims from employees up to CU25m.
- Claims processing services for employees' claims during the next year, regardless of whether these have exceeded the stop-loss threshold of CU25m. The entity is responsible for processing the health insurance claims of employees on behalf of the employer.

Analysis

The entity considers whether to separate the claims processing services from the insurance contract. Similar services to process claims on behalf of customers are available in the market.

The criteria for identifying distinct non-insurance services are met in this example because:

- Claims processing services, similar to those for employers' claims on behalf of the employer, are sold as a stand-alone service without any insurance coverage.
- These services benefit the policyholder independently of the insurance coverage. Had the entity not agreed to provide those services, the policyholder would have to process its employees' medical claims itself or engage other service providers.
- Cash flows associated with claims processing services are not highly interrelated with the cash flows of the insurance coverage, and the entity does not provide for a significant service of integrating claims processing services with the insurance components.

Accordingly, the entity separates the claims processing services (for all claims) from the insurance contract and accounts for them by applying IFRS 15.

¹²⁷ IFRS 17.BC114.

Illustration 24 – Separating components from a life insurance contract with an account balance [Based on example 4 in the Illustrative Examples to IFRS 17, IE42-50]

An entity issues a life insurance contract with an account balance and receives a premium of CU1, 000 when the contract is issued. The account balance increases annually by voluntary amounts paid by the policyholder and is credited with returns from specified assets and decreased by fees charged by the entity (e.g., asset management fees).

The contract promises to pay:

- A death benefit of CU5,000 plus the amount of the account balance, if the insured person dies during the coverage period
- The account balance, if the contract is cancelled (i.e., there are no surrender charges)

The entity uses a claims processing department to process the claims received and an asset management department to manage investments. Other financial institutions offer investment products whose terms are equivalent to the account balance, but without the insurance coverage.

Analysis

The existence of an investment product with equivalent terms indicates that the components may be distinct. However, if the right to provide death benefits provided by the insurance coverage either lapses or matures at the same time as the account balance is returned, the insurance and investment components are highly interrelated and therefore not distinct. Consequently, there would be no separation of an account balance and insurance contract, and the account balance would be accounted for by applying IFRS 17. Amounts related to the investment component would not be presented as insurance revenue or insurance service expenses.

An entity must undertake claims processing and asset management activities to fulfil the contract and does not transfer distinct goods or services to the policyholder simply because the entity performs these. Thus, the entity would not separate these components from the insurance contract.

The requirements for the level of aggregation are likely to result in more granular grouping for measurement purposes and earlier recognition of losses, compared to many existing practices under IFRS 4.

6. Level of aggregation

IFRS 17 defines the level of aggregation to be used for measuring insurance contracts and their related profitability. This is a key issue in identifying onerous contracts and in determining the recognition of profit or loss and presentation in the financial statements.

The starting point for aggregating contracts is to identify portfolios of insurance contracts. A portfolio comprises contracts that are subject to similar risks and managed together.¹²⁸

IFRS 17 then requires an entity to divide the contracts in each portfolio on initial recognition into the following groups:¹²⁹

- Those contracts that are onerous at initial recognition (except for those contracts to which an entity applies the premium allocation approach - see 9.8 below)
- Those contracts that have no significant possibility of becoming onerous subsequently
- All remaining contracts in the portfolio

This can be illustrated as follows:



An entity is permitted, but not required, to divide the portfolio into more groups based on profitability if its internal reporting provides information of profitability at a more detailed level. See 6.2.1 below.¹³⁰

Groups of contracts are established at initial recognition and are not reassessed. $^{\rm 131}$

An entity is prohibited from grouping contracts issued more than one year apart (except in certain circumstances when applying IFRS 17 for the first time, see 17.4 and 17.5 below).¹³² This is commonly referred to as the 'annual cohort' requirement. See 6.2.2 below. This means that separate groups for each portfolio are created at least annually.

- ¹²⁸ IFRS 17.14.
- ¹²⁹ IFRS 17.16.
- ¹³⁰ IFRS 17.21.

¹³¹ IFRS 17.24.

¹³² IFRS 17.22.

2021	Portfolio A			Por	tfolio B				
	2022	Po	rtfolio	A Portfolio		в			
		2023	Portfolio A		A Poi	Portfolio B			
			No significant possibility of becoming onerous		t sig y pos g bea	No significant possibility of becoming onerous		No significant possibility of becoming onerous	
			O prof	ther fitable	e pro	Other profitable		Other profitable	
			Onerous at inception		at One	Onerous at inception		Onerous at inception	

Entities implementing IFRS 17 raised concerns relating to the level of aggregation requirements. The Board, therefore, considered whether to amend the requirements, and if so, how. Having considered a number of possible amendments, the Board reaffirmed its view that the benefits of the level of aggregation requirements significantly outweigh the costs. The Board decided to retain the requirements unchanged.¹³³ See 6.2.2 below.

To measure a group of contracts, an entity may estimate the fulfilment cash flows (see section 8) at a higher level of aggregation than the group or portfolio. This assumes the entity is able to include the appropriate fulfilment cash flows in the measurement of the group by allocating such estimates to groups of contracts.

¹³³ IFRS 17.B139A and BC139B.

How we see it

- The level of aggregation is important because it determines the extent to which expected gains or losses arising from individual contracts may be offset with expected gains and losses of other contracts. It also determines the pattern of profit recognition over time.
- The definition of portfolio may differ from how this term is defined today. An entity's practice under IFRS 4 for identifying portfolios may not be consistent with the IFRS 17 requirement that contracts with different risks will be in different portfolios. Practices applied under IFRS 4 for recognising losses from onerous contracts were based on wider groupings of contracts than those in IFRS 17. For example, liability adequacy tests were often applied at product or legal entity level. We believe the level of aggregation requirements under IFRS 17 will lead to a more granular grouping and, as such, the requirements under IFRS 17 are likely to result in earlier identification of losses compared to the reporting under IFRS 4.
- Separating contracts issued more than one year apart is a new concept compared to many existing insurance accounting practices. In addition, to operational challenges, maintaining separate 'cohorts' limit an entity's ability to offset profits and losses (or spread different levels of profitability) arising from different generations of contracts in a portfolio. The application of the aggregation level under IFRS 17 will, therefore, strongly affect requirements for process, systems and data when implementing the new standard.

6.1. Identifying portfolios

A portfolio comprises contracts that are subject to similar risks and managed together. Contracts have similar risks if the entity expects their cash flows will respond similarly in amount and timing to changes in key assumptions. Contracts within a product line would be expected to have similar risks and, thus, would be in the same portfolio if they were managed together. Contracts in different product lines (for example, single premium-fixed annuities as opposed to regular-term life insurance) would not be expected to have similar risks and would be in different portfolios.¹³⁴

Deciding which contracts have similar risks is a matter of judgement. Many insurance products provide a basic level of insurance cover with optional addons (or riders) at the discretion of the policyholder. For example, a homeowner insurance policy may provide legal cost protection or additional accidental damage cover at the policyholder's discretion in return for additional premiums. The question arises as to the point at which policies of a similar basic type have been tailored to the level at which the risks have become dissimilar. Rider benefits issued and priced separately from the host insurance contract may need to be accounted for as separate contracts because they, in substance, represent new contracts (see 6.1.1 below).

¹³⁴ IFRS 17.14.

For presentation purposes only, insurance contracts are aggregated in the statement of financial position at portfolio level (see 15 below).

6.1.1. Separation of insurance components within an insurance contract

Insurers may combine different types of products or coverages with different risks into one insurance contract. Examples include a contract for both life and disability insurance and one for both pet and home insurance. In some situations, separating a single insurance contract into separate risk components may be required for regulatory reporting purposes. Although IFRS 17 provides guidance on separating non-insurance components within an insurance contract (see 5 above), the standard is silent as to whether an insurance contract can be separated into different insurance components (i.e., allocated to different portfolios for aggregation purposes) and, if so, the basis for such a separation.¹³⁵

Frequently asked questions

Question 6-1: Is it permitted to separate different insurance components from the host insurance contract and measure the components separately? [TRG meeting February 2018 – Agenda paper no. 01, Log S02]

Some entities may combine, for example, home and motor insurance in a single contract for certain policyholders and also issue these products separately in the market to other policyholders. The standard seems to imply that, in these circumstances, the entity would have three portfolios (home, motor, and home and motor insurance) because the contracts contain three different types of risk. However, IFRS 17 refers to groups of insurance contracts and is silent as to whether an insurance contract may be separated into different "sub-insurance components" voluntarily. The TRG members discussed the analysis of an IASB staff paper and observed that:

- The lowest unit of account that is used in IFRS 17 is the contract that includes all insurance components
- Entities would usually design contracts in a way that reflects their substance. Therefore, a contract with the legal form of a single contract would generally be considered a single contract in substance.

However:

- There may be circumstances where the legal form of a single contract would not reflect the substance of its contractual rights and obligations
- Overriding the contract unit of account presumption by separating insurance components of a single insurance contract involves significant judgement and careful consideration of all relevant facts and circumstances. It is not an accounting policy choice
- Combining different types of products or coverages that have different risks into one legal insurance contract is not sufficient to conclude that

¹³⁵ Insurance contracts: Responding to the external editorial review, IASB staff paper 2C, February 2017, Issue A8.

Frequently asked questions (cont'd)

the legal form of the contract does not reflect the substance of its contractual rights and obligations. Similarly, the availability of information to separate cash flows for different risks is not sufficient to conclude that the contract does not reflect the substance of its contractual rights and obligations

The fact that a reinsurance contract held provides cover for underlying contracts that are included in different groups is not sufficient to conclude that accounting for the reinsurance contract held as a single contract does not reflect the substance of its contractual rights and obligations.

The TRG members also observed that considerations that might be relevant in the assessment of whether the legal form of a single contract reflects the substance of its contractual rights and contractual obligations include:

- Interdependency between the different risks covered
- Whether components lapse together
- Whether components can be priced and sold separately.

The TRG members considered that when more than one type of insurance cover is included in one legal contract solely for the administrative convenience of the policyholder and the price is simply the aggregate of the standalone prices for the different insurance covers provided is an example of when it may be appropriate to override the presumption that a single legal contract is the lowest unit of account.

How we see it

- We expect that, in some cases, an insurer that issues combined contracts would choose not to separate them because of the practical difficulties in separating cash flows between components and the loss of the potential for offsetting adverse changes in assumptions on some risks with favourable changes in other risks. However, in other situations, for example, some types of group business and reinsurance contracts, the combination of different coverages into a single contract may be for the purpose of administrative convenience. In these cases, it may be a better reflection of the substance of the arrangement to record premiums and claims and manage for different risks included in one legal contract separately. Separation into sub-insurance components is an important aspect of the application of the level of aggregation under IFRS 17 and requires closer analysis to see whether and to what extent such separation should be applied.
- Some regulatory frameworks require entities to report some, or all, risks of a combined risk insurance contract separately. If accounted for as a single contract under IFRS 17, then the regulatory separation would give rise to a difference between accounting and regulatory reporting.

6.2. Groups of insurance contracts

A group of insurance contracts is the main unit of account for determining measurement. Measurement of insurance contracts occurs at the group level within each portfolio (see 7 below) and each portfolio, to the extent relevant, will consist usually of a minimum of three separate types of groups.

An entity will typically enter into transactions for individual contracts, not groups of contracts. Therefore, IFRS 17 includes requirements that specify how to recognise groups that include contracts issued in more than one reporting period (see 6.2.2 below) and how to derecognise contracts from within a group (see 13.3 below).¹³⁶

The Board concluded that groups should be established on the basis of profitability in order to avoid offsetting of profitable and unprofitable contracts because information about onerous contracts provided useful information about an entity's pricing decisions.¹³⁷

Once groups are established at initial recognition an entity should not reassess the composition of the groups subsequently. Additional contracts should be added to the group after initial recognition of the group following the criteria discussed at 7 below.¹³⁸ A group of contracts should comprise a single contract if that is the result of applying the requirements.¹³⁹

An entity need not determine the grouping of each contract individually. If an entity has reasonable and supportable information to conclude that all contracts in a set of contracts will be in the same group, it may perform the classification based on measuring this set of contracts ('top-down'). If the entity does not have such reasonable and supportable information, it must determine the group to which contracts belong by evaluating individual contracts ('bottom-up').¹⁴⁰

6.2.1. Identifying groups based on profitability

To divide a portfolio into the three minimum groups on inception based on an assessment of profitability will require judgement, using quantitative factors, qualitative factors or a combination of such factors. For example, identifying (sets of) contracts that can be grouped together could require some form of expected probability-weighted basis of assessment as insurance contracts are measured on this basis (see 9 below). Alternatively, it may be possible to do this assessment based on the characteristics of the types of policyholders that are more or less prone to make claims than other types of policyholders (e.g., based on age, gender, geographical location or occupation). Therefore, this assessment is likely to represent a significant effort for insurers and is likely to differ from any form of aggregation used previously under IFRS 4, when many entities will not have performed aggregation at a level lower than portfolio.

- ¹³⁶ IFRS 17.BC139.
- ¹³⁷ IFRS 17.BC119.
 ¹³⁸ IFRS 17.24.
- ¹³⁹ IFRS 17.23.

¹⁴⁰ IFRS 17.17.
For contracts issued to which an entity does not apply the premium allocation approach, an entity should assess whether contracts that are not onerous at initial recognition have no significant possibility of becoming onerous:¹⁴¹

- Based on the likelihood of changes in assumptions which, if they occurred, would result in the contract becoming onerous
- Using information about estimates prepared by the entity's internal reporting. Hence, in assessing whether contracts that are not onerous at initial recognition have no significant possibility of becoming onerous:
 - An entity should not disregard information provided by its internal reporting about the effect of changes in assumptions on different contracts on the possibility of their becoming onerous
 - But an entity is not required to gather additional information beyond that provided by the entity's internal reporting about the effect of changes in assumptions on different contracts

The objective of the requirement to identify contracts that are onerous at initial recognition is to identify contracts that are onerous measured as individual contracts. An entity typically issues individual contracts and it is the characteristics of the individual contracts that determine how they should be grouped. However, the Board concluded this does not mean that the contracts must be measured individually. If an entity can determine, using reasonable and supportable information, that a set of contracts will all be in the same group, the entity can measure that set to determine whether the contracts are onerous or not, because there will be no offsetting effects in the measurement of the set. The same principle applies to the identification of contracts that are not onerous at initial recognition and that have no significant possibility of becoming onerous subsequently. The objective is to identify such contracts at an individual contract level, but this objective can be achieved by assessing a set of contracts if the entity can conclude using reasonable and supportable information that the contracts in the set will all be in the same group.¹⁴²

An entity is permitted, but not required, to subdivide the groups into further groups. For example, an entity may choose to divide portfolios into:¹⁴³

- More groups that are not onerous at initial recognition if the entity's internal reporting provides information that distinguishes:
 - Different levels of profitability

Or

 Or different possibilities of contracts becoming onerous after initial recognition

And

More than one group of contracts that are onerous at initial recognition if the entity's internal reporting provides information at a more detailed level about the extent to which the contracts are onerous.

¹⁴¹ IFRS 17.19.

¹⁴² IFRS 17.BC129.

¹⁴³ IFRS 17.21.

This can be illustrated, as follows:



If contracts within a portfolio fall into different groups only because law or regulation specifically constrains the entity's practical ability to set a different price or level of benefits for policyholders with different characteristics, the entity may include these contracts in the same group.¹⁴⁴ This expedient has been provided because the Board concluded that it would not provide useful information to group separately contracts that an entity is required by law or regulation to group together for determining the pricing or level of benefits. In the Board's opinion, all market participants will be constrained in the same way, particularly if such entities are unable to provide insurance coverage solely on the basis of differences in that characteristic.¹⁴⁵

This expedient should not be applied by analogy to other items.¹⁴⁶ For example, an entity might set the price for contracts without considering differences in a specific characteristic because it believes using that characteristic in pricing may result in a law or regulation prohibiting its use in the future or because doing so is likely to fulfil a public policy objective. These practices, sometimes referred to as 'self-regulatory practices', do not qualify for grouping exception caused by regulatory constraints.¹⁴⁷

Each group (or sub-group) of insurance contracts is measured separately (whether under the general model discussed at 9 below, the premium allocation approach discussed at 10 below, reinsurance contracts held discussed at 11 below or the variable fee approach discussed at 12.3 below).

Frequently asked questions

Question 6-2: How should 'no significant possibility' be interpreted, as set out in paragraph 16(b) of IFRS 17? [TRG meeting May 2018 – Agenda paper no. 07, Log S35]

The IASB staff observed that the term 'no significant possibility' (of becoming onerous) should be interpreted in the context of the objective of the unit of account requirement. The objective is to identify contracts with no significant possibility of becoming onerous at initial recognition in order to group such contracts separately from contracts that are onerous at initial recognition and any remaining contracts in the portfolio that are not onerous at initial recognition. 'No significant possibility of becoming onerous' is different from 'significant insurance risk' and the concept of significant insurance risk should not be used by analogy.

¹⁴⁴ IFRS 17.20.

¹⁴⁵ IFRS 17.BC132.

¹⁴⁶ IFRS 17.20.

¹⁴⁷ IFRS 17.BC133.

Illustration 25 – Identifying groups when profitability constrained by law

An insurer is not permitted by law to price car insurance based on gender. Assume that the premium/risk relationship for motor contracts differs materially depending on gender. Without the relief provided by paragraph 20 of IFRS 17, the insurer would be required to split the motor contracts into separate groups based on gender as profitability varies by gender. However, paragraph 20 of IFRS 17 allows the insurer to combine them in one group as the law constrains the entity's ability to set a different price based on gender and, hence, equalise profitability.

How we see it

- The issuance of contracts that an entity expects to be onerous will be more visible under IFRS 17 due to the requirement to include the contracts in a separate group and disclose losses arising from onerous contracts issued in the reporting period as well as the movement in the loss component of all such contracts. Insurers may issue contracts that are priced below the amount needed to recover the expected fulfilment costs and acquisition expenses for several reasons, for example:
 - The entity may place an implicit value on expected profits from policy renewals that are outside the contract boundary (see section 7.1) but, from which, the insurer expects to make an appropriate level of profit in the longer term.
 - An individual contract may be priced to make an expected loss in the context of other contracts with the same policyholder or related parties, e.g., other family members, such that the insurer expects to make an appropriate level of profit from the package of policies.
 - An entity may price contracts at a loss based on commercial reasons, such as securing a targeted market position.
 - Cross-subsidisation between contracts is common in many industries. It is evident from the level of aggregation in IFRS 17 that the IASB wants to limit instances where profits on some insurance contracts offset expected losses on others.¹⁴⁸
- Pricing information is important in identifying contracts or sets of contracts that an entity expects to be onerous at initial recognition. This may pose some challenges as, historically, insurers have separated pricing and reserving processes. The identification of contracts expected to be onerous when issued may require system and process changes and greater coordination between front and back office.
- IFRS 17 is clear that contracts can be grouped together if regulatory restraints on pricing or benefits are the sole reason that those contracts (or sets of contracts) would be in separate groups. Therefore, if an entity applies this expedient and groups underlying contracts together, it should be able to prove that no other factor exists that would have resulted in different groupings.

¹⁴⁸ IFRS 17.BC119.

6.2.2. 'Annual cohorts'

An entity is prohibited from grouping contracts *issued* (emphasis added) more than one year apart (except in certain circumstances when grouping insurance contracts on transition using either the modified retrospective approach or the fair value approach – see 17.4 and 17.5 below, respectively). To achieve this, the entity should, if necessary, further divide the groups described at 6.2.1 above.¹⁴⁹

The prohibition on grouping together contracts that have been issued more than one year apart is one of the more contentious requirements of IFRS 17. It was included because the Board was concerned that, without it, entities could have perpetually open portfolios and this could: lead to a loss of information about the development of profitability over time; result in the contractual service margin persisting beyond the duration of contracts in the group; and consequently, result in profits not being recognised in the correct periods.¹⁵⁰ The Board acknowledges in the Basis for Conclusions that using a one-year issuing period was an operational simplification given for cost-benefit reasons.¹⁵¹

The Board considered whether prohibiting groups from including contracts issued more than one year apart would create an artificial divide for contracts with cash flows that affect or are affected by cash flows to policyholders of contracts in another group (sometimes referred to as 'mutualisation'). Some stakeholders asserted that such a division would distort the reported result of those contracts and would be operationally burdensome. However, the Board concluded that applying the requirements of IFRS 17 to determine the fulfilment cash flows for groups of such contracts provides an appropriate depiction of the results of such contracts. The Board acknowledged that, for contracts that fully share risks, the groups together will give the same results as a single combined risk-sharing portfolio. Therefore, it considered whether IFRS 17 should give an exception to the requirement to restrict groups to include only contracts issued within one year. However, the Board concluded that setting the boundary for such an exception would add complexity to IFRS 17 and create the risk that the boundary would not be robust or appropriate in all circumstances. Hence, IFRS 17 does not include such an exception. Nonetheless, the Board noted that the requirements specify the amounts to be reported, but not the methodology to be used to arrive at those amounts. Therefore, it may not be necessary for an entity to restrict groups in this way to achieve the same accounting outcome in some circumstances.¹⁵²

There is no requirement in IFRS 17 that an entity must use the same issue period for each group.

In its deliberations on the June 2020 amendments to IFRS 17, the IASB considered, but rejected, a suggestion to amend the annual cohort requirement to base it on the date contracts are 'recognised', instead of the date they are 'issued'. In doing so, the Board confirmed that it intended annual cohorts to be

¹⁴⁹ IFRS 17.22.

¹⁵⁰ IFRS 17.BC136.

¹⁵¹ IFRS 17.BC137.

¹⁵² IFRS 17.BC138.

determined based on the date of issue of the contract and not the date of initial recognition. This is because the objective of the annual cohort requirement is to facilitate timely recognition of profits, losses and trends in profitability. The profitability of a contract is initially set when the contract is issued, based on facts and circumstances at that date, for example interest rates, underwriting expectations and pricing. Hence, the Board concluded that determining annual cohorts based on the date that contracts are issued is necessary to provide useful information about trends in profitability.¹⁵³

This means, for example, that a profitable contract issued on 1 January 2022 which has a coverage period beginning 1 January 2022 will be in the same annual cohort (i.e., group) as a profitable contract issued on 1 January 2022 which has a coverage period beginning on 1 January 2025 (assuming both contracts are part of the same portfolio). However, a profitable contract issued on 1 January 2023 (within the same portfolio) with a coverage period beginning 1 January 2023 will be in a different group from the other contracts as it was issued more than one year apart from the issue date of the other two contracts. As a result, if an entity issues profitable contracts for coverage that does not start for several years and premiums are not due until the coverage starts, the date of initial recognition will be several years after the date of issue.

The IASB staff acknowledge that the use of the term 'issued' has consequences for the practical relief available for determining the discount rate at the date of initial recognition of the group, since the weighted average discount rates used only cover the period that the contracts were issued which cannot exceed one year (see 9.3 below). The IASB staff observed that these effects are a consequence of the unit of account being the group of insurance contracts rather than the individual contract, and an entity could choose to further divide the annual cohort and thereby avoid these effects.

To measure a group of contracts, an entity may estimate the fulfilment cash flows (see 9.2 below) at a higher level of aggregation than the group or portfolio, provided that the entity is able to include the appropriate fulfilment cash flows in the measurement of the group by allocating such estimates to groups of contracts.¹⁵⁴

6.2.2.A. Contracts with intergenerational sharing of risks

Some stakeholders have expressed the view that the level of aggregation requirements artificially segregates portfolios and will not properly depict business performance, particularly when applying the annual cohort requirement to insurance contracts with risk sharing between different generations of policyholders. As a result, the IASB reconsidered the IFRS 17 aggregation requirements during its deliberations on the June 2020 amendments to IFRS 17, but decided that the requirements should be unchanged.

In the Board's view, intergenerational sharing of risk between policyholders is reflected in the fulfilment cash flows and therefore, also reflected in the contractual service margin of each generation of mutualised contracts, as

¹⁵³ IFRS 17.BC139T.

¹⁵⁴ IFRS 17.24.

discussed at 12.1 below. However, each generation of contracts may be more or less profitable for an entity than other generations. Even if the policyholders across all annual cohorts share equally in the returns, the amount of the entity's share in those returns created by each generation may differ, reflecting the contractual terms of each annual cohort and the economic conditions during the coverage period of each annual cohort. For example, an entity's share of 20 per cent of the returns of underlying items is a higher amount for annual cohorts for which the coverage period includes periods in which the returns are 5 per cent than it is for annual cohorts for which the coverage period includes only periods in which the fair value returns are 1 per cent. Accordingly, removing the requirement for annual cohorts for those groups of contracts with intergenerational sharing of risks between policyholders would average higher or lower profits across generations, resulting in a loss of information about changes in profitability over time.¹⁵⁵

The Basis for Conclusions notes that two aspects of applying the annual cohort requirement to some contracts with intergenerational sharing of risks between policyholders that could increase the costs of applying the requirement and reduce the benefits of the resulting information were identified. These are:¹⁵⁶

- Distinguishing between the effect of sharing of risks and the effect of discretion
- Allocating changes in the amount of the entity's share of the fair value of underlying items across annual cohorts that share in the same pool of underlying items

The aspect of the annual cohort requirement in respect of the first bullet point above relates to circumstances in which an entity has discretion over the portion of the fair value returns on underlying items that is paid to policyholders and the portion that is retained by the entity. For example, an entity may be required under the terms of the insurance contracts to pay policyholders a minimum of 90 per cent of the total fair value returns on a specified pool of underlying items with discretion to pay more to policyholders. The Board acknowledged that an entity that has such discretion is required to apply additional judgement to allocate changes in fulfilment cash flows between groups in a way that appropriately reflects the effect of sharing of risks and the effect of the discretion. However, an entity would be required to make that judgement to apply the annual cohort requirement.¹⁵⁷

The concern set out in the second bullet point above relates to insurance contracts with direct participation features. For those contracts an entity adjusts the contractual service margin for changes in the amount of the entity's share of the fair value of underlying items. IFRS 17 does not include requirements on how to allocate those changes across annual cohorts that share in the same pool of underlying items. The Board observed that an entity needs to exercise judgement to identify an allocation approach that provides useful information about the participation of each annual cohort in the

¹⁵⁵ IFRS 17.BC139J.

¹⁵⁶ IFRS 17.BC139K.

¹⁵⁷ IFRS 17.BC139L.

underlying items and to avoid allocation approaches that do not provide useful information. $^{\rm 158}$

In the Board's view, the information that results from the judgements an entity makes in determining the allocation approaches discussed above will provide useful insights about how management expects businesses to develop and could assist users of financial statements to hold management to account based on those expectations.¹⁵⁹

The Board also considered that the benefits of the information provided by the annual cohort requirement are particularly high for some specific insurance contracts with intergenerational sharing of risks. Those specific contracts:¹⁶⁰

- Include features such as financial guarantees on the returns from underlying items and/or other cash flows that do not vary with returns on underlying items (for example, insurance claims)
- Do not share the effect of changes in those features between the entity and policyholders or share the effect between the entity and policyholders in a way that does not result in the entity's share being small

The Board observed that information about the effect of financial guarantees is particularly important in low interest rate environments. The Board acknowledged that for some insurance contracts with substantial intergenerational sharing of risks, it is likely to be rare for the effect of financial guarantees and other cash flows that do not vary with returns on underlying items to cause an annual cohort to become onerous. However, it is exactly that rarity that makes the information particularly useful to users of financial statements when such an event occurs and information about the effect of financial guarantees is particularly important when interest rates are low.¹⁶¹

 ¹⁵⁸ IFRS 17.BC139M.
 ¹⁵⁹ IFRS 17.BC139N.
 ¹⁶⁰ IFRS 17.BC139O.

¹⁶¹ IFRS 17.BC139P.

How we see it

- IFRS 17 requires that groups of contracts do not include any that are issued more than one year apart. This could cause practical challenges with tracking the issue date of contracts because the date of issuance is not necessarily the same as the date of initial recognition of a contract. An example would be contracts that are expected to be profitable and which are issued in advance of the beginning of the coverage period and before the date when the first premium is due. This could give rise to practical issues, for example, if a contract is issued in one annual period, but is initially recognised in another.
- One way to divide the groups is to use an annual period that coincides with an entity's financial reporting period (e.g., contracts issued between 1 January and 31 December comprise a group for an entity with an annual reporting period ending 31 December). However, IFRS 17 does not require any particular approach and entities are also not required to use a twelve-month period when grouping insurance contracts. In addition, an entity that produces interim financial statements is not required to restrict the grouping of contracts issued to those contracts issued in that interim period. See 6 above.
- The IASB decided not to create any specific exceptions to the annual cohorts for contracts with inter-generational mutualisation (i.e., mutualised contracts). As specific practical issues may arise when applying the annual cohort requirement to these types of products, entities would need to find practical ways to apply the annual cohorts in a suitable manner considering the available guidance and the specific circumstances of their jurisdiction.

6.3. Identifying groups for contracts applying the premium allocation approach

For a group of insurance contracts to which the premium allocation approach applies (see 10 below), an entity assesses aggregation of insurance contracts as discussed at 6.2 above except that the entity should assume that no contracts in the portfolio are onerous at initial recognition unless facts and circumstances indicate otherwise.¹⁶²

An entity should assess whether contracts that are not onerous at initial recognition have no significant possibility of becoming onerous subsequently by assessing the likelihood of changes in applicable facts and circumstances.

¹⁶² IFRS 17.18.

7. Initial recognition

7.1. Initial recognition of insurance and reinsurance contracts issued

An entity should recognise a group of insurance contracts it issues from the earliest of the following: $^{\rm 163}$

- The beginning of the coverage period of the group of contracts
- Date when the first payment from a policyholder in the group is due or when the first payment is received if there is no due date
- For a group of onerous contracts, when the group becomes onerous, if facts and circumstances indicate that the group is onerous

If there is no contractual due date, the first payment from the policyholder is deemed to be due when it is received. An entity is required to determine whether any contracts form a group of onerous contracts before the earlier of the first two dates above (i.e., before the earlier of the beginning of the coverage period and the date when the first payment from a policyholder in the group is due) if facts and circumstances indicate there is such a group.¹⁶⁴

IFRS 17, as amended in June 2020, states that in recognising a group of insurance contracts in a reporting period, an entity must include only contracts that individually meet one of the above-mentioned recognition criteria.¹⁶⁵ This clarifies that an individual contract has to be recognised initially and measured at a time which is specific to the contract. This means that the date of initial recognition of an individual contract added to a group of insurance contracts has to be determined for that individual insurance contract using the measurement assumptions at that date rather than determined by the date of initial recognition of the group to which individual contracts will be added.

In addition, an entity must make estimates for the discount rates at the date of initial recognition (see 9.3 below) and for the coverage units provided in the reporting period (see 9.7 below).¹⁶⁶

An entity may include more contracts in the group after the end of a reporting period (subject to the constraint that contracts within a group cannot be issued more than a year apart (See 6.2.2 above). An entity must add contracts to the group in the reporting period in which the contracts meet the recognition criteria set out above, applied to each contract individually.¹⁶⁷

When new contracts are added to a group, this may result in a change to the determination of the weighted-average discount rates at the date of initial recognition (see 9.3 below). An entity must apply any revised discount rates from the start of the reporting period in which the new contracts are added to the group.¹⁶⁸ There is no retrospective 'catch-up' adjustment for previous

- ¹⁶³ IFRS 17.25.
- ¹⁶⁴ IFRS 17.26.
- ¹⁶⁵ IFRS 17.28.
- ¹⁶⁶ IFRS 17.28.
 ¹⁶⁷ IFRS 17.28.
- ¹⁶⁸ IFRS 17.28.

reporting periods, the effect of any change in average discount rates is therefore recognised prospectively.

For reinsurance contracts held, the group consists of the reinsurance contracts, not the underlying direct contracts which are subject to the reinsurance.

Illustration 26 – Determining the date of recognition of a group of insurance contracts

Example 1

An entity issues a group of insurance contracts to policyholders beginning on 25 December 2022. The coverage period of the group begins on 1 January 2023 and the first premium from a policyholder in the group is due on 5 January 2023. The group of insurance contracts is not onerous.

The group of insurance contracts is recognised on 1 January 2023 (i.e., the start of the coverage period of the group) which is earlier than the date that the first premium is due.

Example 2

An entity issues a group of insurance contracts to policyholders beginning on 25 December 2022. The coverage period of the group begins on 1 January 2023 and the first premium from a policyholder in the group is due on 30 December 2022. The group of insurance contracts is not onerous.

The group of insurance contracts is recognised on 30 December 2022 (i.e., the date that the first premium is due) which is earlier than the date of the beginning of the coverage period. However, if the entity has a reporting date of 31 December 2022, only those contracts within the group issued as at the reporting date will be recognised in the financial statements for the period ending 31 December 2022.

Example 3

An entity issues a group of insurance contracts to policyholders beginning on 25 December 2022. On 25 December 2022, the entity determines that the group of insurance contracts is onerous. The coverage period of the group begins on 1 January 2023 and the first premium from a policyholder in the group is due on 5 January 2023.

The group of insurance contracts is recognised on 25 December 2022, which is when the group of insurance contracts is determined to be onerous. However, if the entity has a reporting date of 31 December 2022, only those contracts within the group that are issued as at the reporting date will be recognised in the financial statements for the period ending 31 December 2022.

How we see it

- The inception date of a contract is when an entity is bound by the terms of the contract and, as such, has a contractual obligation to accept risk (also known as the issue date of a contract). The inception date is typically before the beginning of coverage and due date for the initial premium. However, IFRS 17 only requires recognition of issued insurance contracts before these dates if facts and circumstances indicate that the contracts in the group are onerous. Allowing entities to recognise insurance contracts they have issued after inception of the contracts represents a practical expedient introduced by the Board to allow entities to continue their existing recognition practices. However, an entity is required to consider whether facts and circumstances indicate that insurance contracts it has issued are onerous at inception or any other time before they would otherwise be recognised.¹⁶⁹
- Assessing expected profitability is performed on initial recognition of contracts as they are assigned to a group of contracts. The contracts all then stay within that same group until they are derecognised. This means that it is possible within a group to offset losses on some contracts with gains on others and, therefore, to avoid the recognition of onerous contract losses, as these are determined at group level.

7.2. Initial recognition of reinsurance contracts held

IFRS 17 states that for a group of reinsurance contracts held the requirements discussed at 7.1 above do not apply. Instead, a group of reinsurance contracts held is recognised from the earliest of the following:¹⁷⁰

- The beginning of the coverage period of the group of reinsurance contracts held; and
- The date on which the entity recognises an onerous group of underlying insurance contracts (see 7.1 above) if the entity entered into the related reinsurance contract held in the group of reinsurance contracts held at or before that date. (Note that a group of reinsurance contracts itself cannot be onerous, see 11.4 below.)

However, notwithstanding the above requirements, an entity should delay the recognition of a group of reinsurance contracts held that provide proportionate coverage until the date that any underlying insurance contract is initially recognised, if that date is later than the beginning of the coverage period of the group of reinsurance contracts held.¹⁷¹

IFRS 17 does not include guidance on when a contract provides proportionate coverage. In the Basis for Conclusions, it is observed that many reinsurance arrangements are designed to cover the claims incurred under underlying insurance contracts written during a specified period. In some cases, the reinsurance contract held covers the losses of separate contracts on a proportionate basis. In other cases, the reinsurance contract held covers

¹⁶⁹ IFRS 17.BC140-145.

¹⁷⁰ IFRS 17.62.

¹⁷¹ IFRS 17.62A.

aggregate losses from a group of underlying contracts that exceed a specified amount. $^{\rm 172}$

When a reinsurance contract held provides proportionate coverage, the initial recognition of the (group of) reinsurance contract(s) will, as a simplification, be later than the beginning of the coverage period if no underlying contracts have been recognised as at that date.¹⁷³

However, when the group of reinsurance contracts held covers aggregate losses arising from a group of insurance contracts over a specified amount, the group of reinsurance contracts held is recognised when the coverage period of the group of reinsurance contracts begins. In these contracts, the entity benefits from coverage, in case the underlying losses exceed the threshold, from the beginning of the group of reinsurance contracts held because such losses accumulate throughout the coverage period. In the Board's view, the coverage benefits the entity from the beginning of the group of reinsurance contracts held because period of the group of reinsurance contracts held because period of the group of reinsurance contracts held because period of the group of reinsurance contracts held because such losses accumulate throughout the coverage period.

Illustration 27 – Recognition of reinsurance contract held providing proportionate coverage

An entity holds a reinsurance contract in respect of a term life insurance portfolio on a quota share basis whereby 20% of all premiums and all claims from the underlying insurance contracts are ceded to the reinsurer. The reinsurance contract is considered to be a group for the purpose of aggregation and incepts on 1 January 2023. The first underlying insurance contract is recognised on 1 February 2023.

As the reinsurance contract held provides proportionate coverage initial recognition of the contract is delayed until the later of the beginning of the coverage period of the contract and the initial recognition of any underlying contract, i.e. ,1 February 2023.

Illustration 28 – Recognition of reinsurance contract held which does not provide proportionate coverage

An entity holds a reinsurance contract which provides excess of loss protection for a motor insurance portfolio. In exchange for a fixed premium of CU100, the reinsurance contract provides cover for claims arising from individual events in the portfolio in excess of CU500 up to a limit of CU200. The reinsurance contract is considered to be a group for the purpose of aggregation and incepts on 1 January 2023. The first underlying motor insurance contract is recognised on 1 February 2023.

As the reinsurance contract held does not provide proportionate coverage (because neither the premiums nor the claims are a proportion of the premiums and claims from the underlying insurance contracts) the contract is recognised at the beginning of the coverage period of the contract, i.e., 1 January 2023.

¹⁷² IFRS 17.BC304.

¹⁷³ IFRS 17.BC305(a).

¹⁷⁴ IFRS 17.BC305(b).

Illustration 29 – Recognition of reinsurance contract held when the underlying insurance contracts are onerous

An entity holds a reinsurance contract in respect of a term life insurance portfolio on a quota share basis, whereby 20% of all premiums and all claims from the underlying insurance contracts are ceded to the reinsurer. The reinsurance contract is considered to be a group for the purpose of aggregation. The reinsurance contract was entered into on 1 December 2022 and incepts on 1 January 2023. The first underlying insurance contract were entered into on 1 December 2022 and incept on 1 January 2023. On 15 December 2022, the group of underlying insurance contracts are determined to be onerous.

As the group of underlying insurance contracts are onerous and the reinsurance held was entered into at the same time as the underlying insurance contracts, the date of initial recognition of the reinsurance contract held is 15 December 2022.

How we see it

- The recognition requirements for reinsurance contracts held that provide proportionate coverage are meant to simplify recognition and measurement for these contracts. Circumstances in which the first underlying ceded contract is issued shortly after the reinsurance contracts are written will result in similar timing of recognition for proportionate and "other-than-proportionate" reinsurance contracts. In other cases, there may be a greater difference in the timing of recognition.
- As mentioned above, IFRS 17 does not include guidance on when a contract provides proportionate coverage. Entities would, therefore, need to consider how it will determine whether a contract provides proportionate coverage or not. The guidance as per the Basis for Conclusions, paragraph BC304 referenced above, could provide a useful input to this consideration.

7.3. Initial recognition of insurance acquisition cash flows

Insurance acquisition cash flows are 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. Such cash flows include cash flows that are not directly attributable to individual contracts or groups of insurance contracts within the portfolio.¹⁷⁵

An entity must recognise an asset for insurance acquisition cash flows paid (or insurance acquisition cash flows for which a liability has been recognised under another IFRS standard) before the related group of insurance contracts is recognised, unless it elects to expense those acquisition cash flows as incurred for premium allocation approach contracts (see 10 below). The entity should

¹⁷⁵ IFRS 17 Appendix A.

recognise such an asset for each related group of insurance contracts.¹⁷⁶ The entity needs to allocate insurance acquisition cash flows to an existing or future group of insurance contracts using a systematic and rational method.¹⁷⁷

If an entity recognises in a reporting period only some of the insurance contracts expected to be included in the group (see 6.2 above), it should determine the related portion of an asset for insurance acquisition cash flows for the group on a systematic and rational basis considering the expected timing of recognition of contracts in the group.¹⁷⁸

Any insurance acquisition cash flows paid at the date of initial recognition of the group of insurance contracts are recognised as part of the contractual service margin of the group of insurance contracts (see 9.5 below).

Any insurance acquisition cash flows an entity expects to pay after the related group of insurance contracts is recognised are part of the fulfilment cash flows of the group of insurance contracts (see 9.2 below).

The systematic and rational method of allocating insurance acquisition cash flows to groups referred to above shall be used to allocate:¹⁷⁹

- Insurance acquisition cash flows that are directly attributable to a group of insurance contracts:
 - To that group; and
 - To groups that will include insurance contracts that are expected to arise from renewals of the insurance contracts in that group
- Insurance acquisition cash flows directly attributable to a portfolio of insurance contracts that are not directly attributable to individual contracts or groups of contracts to groups in the portfolio.

The last bullet point above means that insurance acquisition cash flows directly attributable to a portfolio of insurance contracts, but not directly attributable to a group of insurance contracts are systematically and rationally allocated to existing or future groups of insurance contracts in the portfolio.¹⁸⁰

The Basis for Conclusions notes that, prior to the June 2020 amendments, IFRS 17 did not allow insurance acquisition cash flows to be allocated to expected contract renewals. However, in some situations, an entity issues an insurance contract with a short coverage period, such as one year, but might incur high up-front costs, such as commissions to sales agents, relative to the premium the entity will charge for that contract. The entity agrees to those costs because it anticipates that some policyholders will renew their contracts. Often, the costs are fully directly attributable to the initial insurance contract issued because they are non-refundable and are not contingent on the policyholder renewing the contracts. In some circumstances, such commissions are higher than the premium charged and the application of IFRS 17, as issued in May 2017, would have resulted in the contract being identified as onerous. The Board considered that recognising a loss in those circumstances would

¹⁷⁶ IFRS 17.28B.

¹⁷⁷ IFRS 17.28A.

¹⁷⁸ IFRS 17.28D.

¹⁷⁹ IFRS 17.B35A.

¹⁸⁰ IFRS 17.BC184B.

provide useful information to policyholders as it reflects that the entity does not have the right to charge policyholders to renew the contracts or to reclaim the commission from the sales agents if policyholders choose not to renew their contracts.¹⁸¹

However, the Board was persuaded that an amendment to IFRS 17 requiring an entity to allocate insurance acquisition cash flows to expected renewals of contracts would also provide useful information to users of financial statements about insurance acquisition cash flows. This approach depicts the payment of up-front costs such as commission as an asset that an entity expects to recover through expected renewals of contracts. The asset reflects the right of an entity to not pay again costs it has already paid to obtain renewals. The Board noted that the information resulting from the amendment is comparable to the information provided by IFRS 15 for the incremental costs of obtaining a contract.¹⁸²

The Board considered whether it should develop requirements to specify how to allocate insurance acquisition cash flows to expected renewals of contracts. However, it concluded that requiring allocation applying a systematic and rational method, consistent with the requirements for allocating fixed and variable overheads (see 9.2.3.L below), was sufficient.¹⁸³

An entity might add insurance contracts to a group of insurance contracts across more than one reporting period. In such circumstances, the entity must derecognise the portion of an asset for insurance acquisition cash flows that relates to insurance contracts added to the group in that period and continue to recognise an asset for insurance acquisition cash flows to the extent that the asset relates to insurance contracts expected to be added to the group in a future reporting period.¹⁸⁴

Impairment and derecognition of insurance acquisition cash flow assets is discussed at 9.10 and 13.4 below, respectively.

7.4. Initial recognition of investment contracts with discretionary participation features

The date of initial recognition of an investment contract with discretionary participation features (see 12.3 below) is the date that the entity becomes party to the contract. This is consistent with the requirements for recognition of a financial instrument in IFRS 9 and is likely to be earlier than the date of initial recognition for an insurance contract.¹⁸⁵

¹⁸¹ IFRS 17.BC184B.

 ¹⁸² IFRS 17.BC184E.
 ¹⁸³ IFRS 17.BC184F.

¹⁸⁴ IFRS 17.B35C.

¹⁸⁵ IFRS 17.71.

8. Measurement – overview

IFRS 17 has a default approach to measuring groups of insurance contracts (which is the unit of account for measurement as discussed at 6.2 above) described in this publication as the 'general model'. The general model does not distinguish between so-called short duration and long duration (or life and non-life) insurance contracts. It also does not distinguish between insurance products.

IFRS 17 also includes modifications and a simplification to the general model that are applicable in specific circumstances (see section 8.2).

The basic revenue recognition principle under IFRS 17 is that no profit is recognised on initial recognition of a group of insurance contracts, but that a loss must be recognised if the group of contracts is onerous (see 6 above for the timing of initial recognition). Subsequently, profit and revenue are recognised as services are performed under the contract.

8.1. Overview of the general model

The general model measures a group of insurance contracts as the sum of the following components, or 'building blocks', for each group of insurance contracts:¹⁸⁶

- ► Fulfilment cash flows, which comprise:
 - Estimates of expected future cash flows over the life of the contract (see section 9.2)
 - An adjustment to reflect the time value of money and the financial risks related to the future cash flows to the extent that the financial risks are not included in the estimates of the future cash flows (see section 9.3)
 - A risk adjustment for non-financial risk (see section 9.4)
- A contractual service margin representing unearned profit an entity will recognise as it provides service under the insurance contracts in the group (see section 9.5)

This is illustrated in the diagram below.

The building blocks are the cornerstone of the IFRS 17 measurement model. Specific modifications or simplification are applied to certain types of contract based on their characteristics.

¹⁸⁶ IFRS 17.32.



After initial recognition of a group of insurance contracts, the carrying amount of the group at each reporting date is the sum of:

- The liability for remaining coverage, comprising:
 - The fulfilment cash flows related to future service allocated to the group at that date
 - The contractual service margin of the group at that date
- The liability for incurred claims comprising the fulfilment cash flows related to past service allocated to the group at that date

The components of the liability for remaining coverage and the liability for incurred claims are, as follows:



The general model is discussed further at 9 below.

8.2. Modification to the general model

An entity should apply the general model to all groups of insurance contracts except as follows: [IFRS 17.29]

 A simplified or premium allocation approach may be applied for groups of insurance contracts meeting either of the specified criteria for that approach (see 10 below)

- For groups of reinsurance contracts held, an entity should apply either the general model or the premium allocation approach as modified by separate measurement requirements (see 11 below)
- An adaptation of the general model, the 'variable fee approach' is applied to insurance contracts with direct participation features (see 12. below)
- For groups of investment contracts with discretionary participation features, an entity applies the general model (as modified) because of the lack of insurance risk in the contracts (see 12.4 below)

8.3. Insurance contracts in a foreign currency

IFRS 17 states that when applying IAS 21 - *The Effects of Changes in Foreign Exchange Rates* to a group of insurance contracts that generate cash flows in a foreign currency, an entity should treat the group of contracts, including the contractual service margin, as a monetary item.¹⁸⁷

The Basis for Conclusions observes that the contractual service margin (see 9.5 below) might otherwise be classified as non-monetary, because it is similar to a prepayment for goods and services. However, in the Board's view, it was simpler to treat all components of the measurement of an insurance contract in the same way and, since the measurement in IFRS 17 is largely based on cash flow estimates, the Board concluded that it was more appropriate to view the insurance contract as a whole as a monetary item.¹⁸⁸ The Board's conclusion that the insurance contract is a monetary item does not change if an entity measures a group of insurance contracts using the simplified approach (i.e., the premium allocation approach) for the measurement of the liability for the remaining coverage.¹⁸⁹

¹⁸⁷ IFRS 17.30.
¹⁸⁸ IFRS 17.BC277.
¹⁸⁹ IFRS 17.BC278.

How we see it

- Treating insurance contracts as monetary items means that groups of insurance contracts in a foreign currency are retranslated to the entity's functional currency using the exchange rate applying at each reporting date. Exchange differences arising on retranslation are accounted for in profit or loss. IFRS 4 contained no similar assertion and, therefore, many insurers, following the guidance on monetary and non-monetary items in IAS 21, treated unearned premium provisions (i.e., deferred revenue) and deferred acquisition costs in a foreign currency as non-monetary items and did not retranslate these balances subsequent to initial recognition.
- IFRS 17 requirements apply to groups of insurance contracts. These groups may contain cash flows in more than one currency. Neither IAS 21 nor IFRS 17 provides explicit guidance on how to apply IAS 21 to a group of insurance contracts that are impacted by cash flows of multiple currencies. This is particularly relevant to the calculation of the contractual service margin of the group of multi-currency contracts. In accordance with IAS 8 Accounting Policies, Changes in Accounting Estimates and Errors in the absence of an IFRS that specifically applies to an event or condition, management must use judgement in developing and applying an accounting policy that results in information that is relevant and reliable. There may be several approaches to deal with 'multi-currency' groups under the general model, for example:
 - Determine the predominant currency of a group and measure the contractual service margin using that predominant currency
 - Measure the contractual service margin with all fulfilment cash flows expressed in the functional currency (i.e., measure the contractual service margin using an entity's functional currency)
 - Sub-divide the cash flows of the group of contracts by underlying currencies and measure the contractual service margin of the group using this sub-division.
- However, an entity should determine its policy with care and consider the overall requirements of both IAS 21 and IFRS 17, including the fact that the unit of account of the IFRS 17 measurement is the group of insurance contracts.
- In conjunction with the previous matter, an entity may also need to establish a policy on how it regards the effects of changes in foreign exchange rates in the financial statements. For example, to classify them as an 'exchange difference' under IAS 21 or a change in financial risk under IFRS 17. In the context of multi-currency' groups, neither IAS 21 nor IFRS 17 provide a dividing line of how the effect of a change in exchange rate should be classified. For insurance contracts without direct participation features, the classification will impact how the total differences will be disaggregated in the statement of comprehensive income between profit or loss and other comprehensive income. As neither IAS 21 nor IFRS 17 specify where exchange differences on insurance contract liabilities should be presented in the statement of financial performance, entities should apply judgement to determine the appropriate line item(s) in which exchange differences are recorded. Entities should use judgement to develop and apply an accounting policy and do so consistently. However, foreign currency risk is considered to be

financial risk by IFRS 17 and so presenting exchange differences in insurance service expenses would not be appropriate.

For an insurance contract with direct participation features, additional considerations may be necessary as, applying IFRS 17, the contractual service margin will also be adjusted for changes in financial risks, which include changes in foreign currency rates. Also, the fair value returns from the underlying items may be subject to foreign exchange differences.

9. Measurement - General Model

As explained at 8.1 above, the general model is based on the following building blocks for each group of insurance contracts:¹⁹⁰

- ▶ Fulfilment cash flows, which comprise (see 9.2 below):
 - Estimates of expected future cash flows over the life of the contract (see 9.2 below)
 - An adjustment to reflect the time value of money and the financial risks related to the future cash flows to the extent that the financial risks are not included in the estimates of the future cash flows (see 9.3 below)
 - A risk adjustment for non-financial risk (see 9.4 below)
- A contractual service margin, representing the unearned profit on the group of contracts (see 9.5 below)

The contractual service margin is released to profit or loss over the period that services are provided to the policyholder. Therefore, at initial recognition, no profit should normally be recognised. However, a loss is recognised if the group of contracts is onerous at the date that the group is determined to be onerous (see 6 above). Measurement of onerous contracts is discussed at 9.8 below. The contractual service margin for insurance contracts with direct participation features is adjusted over the service period in a different way from the contractual service margin for insurance contracts without direct participation features. Contracts with direct participation features are discussed at 12.3 below. Once the contractual service margin is utilised, the group of insurance contracts will be measured using only the fulfilment cash flows.

9.1. The contract boundary

This section deals with the general requirements of IFRS 17 to establish the contract boundary. Contract boundary issues specifically related to reinsurance contracts issued are discussed at 8.9.1 below. Contracts boundary issues related to reinsurance contracts held are discussed at 10.2 below.

The measurement of a group of insurance contracts includes all the cash flows expected to result from the contracts in the group, reflecting estimates of policyholder behaviour. Thus, to identify the future cash flows that will arise as the entity fulfils its obligations, it is necessary to determine the contract boundary that distinguishes whether future premiums, and the resulting benefits and claims, arise from:¹⁹¹

Existing insurance contracts. If so, those future premiums, and the resulting benefits and claims, are included in the measurement of the group of insurance contracts

Or

Identifying the contract boundary under IFRS 17 is fundamental to the measurement of the fulfilment cash flows of a group of contracts.

¹⁹⁰ IFRS 17.32.

¹⁹¹ IFRS 17.BC159.

Future insurance contracts. If so, those future premiums, and the resulting benefits and claims, are not included in the measurement of the group of existing insurance contracts

As such, a liability or asset relating to expected premiums or expected claims outside the boundary of the existing insurance contract should not be recognised. Such amounts relate to future insurance contracts.¹⁹² However, an asset should be recognised for acquisition cash flows paid before the related group of insurance contracts is recognised (see 7.3 above and 9.1.3 below).

Estimates of cash flows in a scenario should include all cash flows within the boundary of an existing contract and no other cash flows. In determining the boundary of a contract, an entity should consider its substantive rights and obligations and whether they arise from a contract, law or regulation (see 3.1 above).¹⁹³

The essence of a contract is that it binds one or both of the parties. If both parties are bound equally, the boundary of the contract is generally clear. Similarly, if neither party is bound, it is clear that no genuine contract exists. Thus: ¹⁹⁴

- The outer limit of the existing contract is the point at which the entity is no longer required to provide coverage and the policyholder has no right of renewal. Beyond that outer limit, neither party is bound.
- The entity is no longer bound by the existing contract at the point at which the contract confers on the entity the practical ability to reassess the risk presented by a policyholder and, as a result, the right to set a price that fully reflects that risk.

However, if an entity has the practical ability to reassess the risk presented by a policyholder, but does not have the right to set a price that fully reflects the reassessed risk, the contract still binds the entity. Thus, that point would lie within the boundary of the existing contract, unless the restriction on the entity's ability to reprice the contract is so minimal that it is expected to have no commercial substance (i.e., the restriction has no discernible effect on the economics of the transaction). In the Board's view, a restriction with no commercial substance does not bind the entity.¹⁹⁵

It may be more difficult to decide the contract boundary if the contract binds one party more tightly than the other. Examples of circumstances in which it is more difficult include:¹⁹⁶

An entity may price a contract so that the premiums charged in early periods subsidise the premiums charged in later periods, even if the contract states that each premium relates to an equivalent period of coverage. This would be the case if the contract charges level premiums and the risks covered by the contract increase with time. The Board concluded that the premiums charged in later periods would be within the boundary of the contract because, after the first period of coverage,

¹⁹² IFRS 17.35.

¹⁹³ IFRS 17.B61.

¹⁹⁴ IFRS 17.BC160.

¹⁹⁵ IFRS 17.BC161.

¹⁹⁶ IFRS 17.BC162.

the policyholder has obtained something of value, namely the ability to continue coverage at a level price despite increasing risk.

- An insurance contract might bind the entity, but not the policyholder, by requiring the entity to continue to accept premiums and provide coverage (without the ability to reprice the contract) but permitting the policyholder to stop paying premiums, although possibly incurring a penalty. In the Board's view, the premiums the entity is required to accept and the resulting coverage it is required to provide fall within the boundary of the contract. When an issuer of an insurance contract is required by the contract to renew or otherwise continue the contract, it should assess whether premiums and related cash flows that arise from the renewed contract are within the boundary of the original contract.¹⁹⁷
- An insurance contract may permit an entity to reprice the contract on the basis of general market experience (for example, mortality experience), without permitting the entity to reassess the individual policyholder's risk profile (for example, the policyholder's health). In this case, the insurance contract binds the entity by requiring it to provide the policyholder with something of value continuing insurance coverage without the need to undergo underwriting again. Although the terms of the contract are such that the policyholder has a benefit in renewing the contract, and, thus, the entity expects that renewals will occur, the contract does not require the policyholder to renew the contract. Therefore, the repriced cash flows are outside the contract boundary provided both criteria for repricing at a portfolio level mentioned above are met.

As a result of the above context, IFRS 17 specifies that cash flows are within the boundary of an insurance contract if they arise from substantive rights and obligations that exist during the reporting period in which the entity can compel the policyholder to pay the premiums or in which the entity has a substantive obligation to provide the policyholder with insurance contract services. A substantive obligation to provide insurance contract services ends when:¹⁹⁸

The entity has the practical ability to reassess the risks of the particular policyholder and, as a result, can set a price or level of benefits that fully reflects those risks

Or

- Both of the following criteria are satisfied:
 - The entity has the practical ability to reassess the risks of the portfolio of insurance contracts that contains the contract and, as such, can set a price or level of benefits that fully reflects the risk of that portfolio
 - The pricing of the premiums up to the date when the risks are reassessed does not take into account the risks that relate to periods after the reassessment date

The assessment of the contract boundary is made in each reporting period. This is because an entity updates the measurement of the group of insurance contracts to which the individual contract belongs and, hence, the portfolio of

¹⁹⁷ IFRS 17.B63.

¹⁹⁸ IFRS 17.34.

contracts in each reporting period. For example, in one reporting period an entity may decide that a renewal premium for a portfolio of contracts is outside the contract boundary because the restriction on the entity's ability to reprice the contract has no commercial substance. However, if circumstances change so that the same restrictions on the entity's ability to reprice the portfolio take on commercial substance, the entity may conclude that future renewal premiums for that portfolio of contracts are within the boundary of the contract.¹⁹⁹

Frequently asked questions

Question 9-1: How to interpret the term "contract boundary" described in paragraph 34 of IFRS 17 in the context of contracts with annual repricing mechanisms. [TRG meeting April 2019 – Agenda paper no. 02, Log S22]

The submission describes specified fact patterns of two insurance contracts. In these fact patterns, risk is assessed at a portfolio of insurance contracts level rather than an individual contract level, and therefore paragraph 34(a) of IFRS 17 is not applicable. The contract boundary is instead determined based on the assessment of risk applying paragraph 34(b) of IFRS 17.

TRG members discussed the analysis in the staff paper and noted that:

- Paragraph 34(a) of IFRS 17 refers to the practical ability to reassess the risks of the policyholder (i.e., policyholder risk). Paragraph 34(b) of IFRS 17 should be read as an extension of the risk assessment in paragraph 34(a) from the individual to portfolio level, without extending policyholder risks to all types of risks and considerations applied by an entity when pricing a contract. The staff noted that policyholder risk includes both the insurance risk and the financial risk transferred from the policyholder to the entity and, therefore, excludes lapse risk and expense risk.
- For the specified fact patterns of the two contracts described in the submission, the conclusion in the paper is that an entity can reset annually the premiums of the portfolios to which both of the example contracts belong to reflect the reassessed risk of those portfolios. The entity has the practical ability to reassess the risks of the specific portfolio of insurance contracts that contains the contract and, as a result, can set a price that fully reflects the risk of that portfolio and meets the requirements of paragraph 34(b)(i) of IFRS 17. In the fact pattern presented, premiums increase in line with age each year based on a step-rated table, i.e., the contract does not charge level premiums. Consequently, the staff analysis assumes that the requirements in paragraph 34(b)(ii) of IFRS 17 are also met. Accordingly, for those two contracts, the cash flows resulting from the renewal terms should not be included within the boundary of the existing insurance contract.
- If, conversely, the fact patterns of the two contracts described in the submission was varied such that the entity instead has a practical ability to reassess risks only at a general level (e.g., for a general community) and, as a result, can set a price for the portfolio of insurance contracts that contains the contract (e.g., using a generic

¹⁹⁹ IFRS 17.BC164.

step-rate table), then this would provide the individual policyholders within the portfolios with a substantive right and consequently, the cash flows resulting from these renewal terms should be included within the boundary of the existing contract.

- It was observed that, in practice, some entities use a step-rated premium table for pricing that averages out the pricing between the different levels on the table (i.e., between the different steps).
 All relevant facts and circumstances would need to be considered in assessing whether the requirements in paragraph 34(b)(ii) of IFRS 17 are met.
- TRG members also observed that the two examples described are for specific fact patterns. In practice, the features of contracts and their repricing might be different from those examples. The facts and circumstance of each contract should be assessed to reach an appropriate conclusion applying the requirements of IFRS 17.

Question 9-2: Whether the reference to a 'portfolio of insurance contracts' in paragraph 34(b) of IFRS 17 is a 'portfolio of insurance contracts' as defined in Appendix A of IFRS 17. [TRG meeting April 2019 - Agenda paper no. 02, Log S86]

The submission asked whether the reference to a 'portfolio of insurance contracts' in paragraph 34(b) of IFRS 17 is a 'portfolio of insurance contracts' as defined in Appendix A of IFRS 17. The submission noted the discussion of Agenda Paper 2 at the February 2018 TRG meeting and stated that some stakeholders think that a 'portfolio of insurance contracts' should be interpreted at a more granular level than is defined in Appendix A of IFRS 17 for the purpose of applying paragraph 34(b) of IFRS 17 (for example, at a group of insurance contracts level). The TRG agreed with the Staff's analysis that a 'portfolio of insurance contracts' is a defined term in Appendix A of IFRS 17. There is no difference between the use of that defined term in paragraph 14 of IFRS 17 and paragraph 34 of IFRS 17.

Question 9-3: What is the interrelation between the requirements in paragraph 35 of IFRS 17 (cash flows that are outside the boundary of an insurance contract) and the requirements in paragraph B64 of IFRS 17 (reassessment of the boundary of an insurance contract at each reporting date)? [TRG meeting September 2018 – Agenda paper no. 05, Log S66]

The submission considered how to account for cash flows of an insurance contract issued that, at initial recognition, are outside the boundary of the contract when facts or circumstances change over time. In particular, the staff paper considered the interaction between the statement in paragraph 35 of IFRS 17 that cash flows outside the boundary of a contract at initial recognition are cash flows of a new contract and the final sentence of paragraph B64 which permits an entity to re-assess the boundary of an insurance contract to include the effect of changes in circumstances. The IASB staff observed that:

- ► The requirements in the two paragraphs are different because they address two different circumstances
- When paragraph 35 of IFRS 17 applies, additional cash flows will be recognised as a new contract when the recognition criteria of a new group of contracts are met

Paragraph B64 of IFRS 17 discusses the assessment of the practical ability of an entity to reprice a contract considering constraints that might limit that ability and, therefore, applies to the reassessment of the contract boundary in this context. For example, a contract boundary reassessment may occur when, in one reporting period, repricing restrictions that have no commercial substance but in the next reporting period, facts and circumstances come to light that would have led to a different conclusion at inception (if known then). When paragraph B64 applies, the fulfilment cash flows are updated to reflect changes in cash flows that are within the (revised) contract boundary. When such changes relate to future service, they are recognised by adjusting the carrying amount of the contractual service margin of the group of contracts to which the contract belongs.

The TRG members agreed with the IASB staff observations, but noted the apparent conflict between the two paragraphs which stems from a lack of clarity of the meaning of paragraph B64. IASB staff observed that the meaning of the last sentence in paragraph B64 should be considered in the context of the preceding sentences in paragraph B64, paragraphs B61-B63 and the Basis for Conclusions. The TRG members also expressed different views as to the applicability of the distinction between paragraphs 35 and B64 of IFRS 17 in circumstances where cash flows that are outside the contract boundary at initial recognition relate to an additional type of coverage that may be provided over the coverage period of the contract.

Question 9-4: Are cash flows related to free additional coverage within the boundary of the insurance contracts purchased by policyholders? [TRG meeting September 2018 – Agenda paper no. 11, Log S62]

The IASB staff discussed a question submitted to the TRG regarding a type of entity in which parties become members by purchasing an insurance contract. Members of the entity are also provided with free additional insurance coverage. The entity can cancel the free additional insurance coverage at any time and the question arises as to whether cash flows related to the free additional coverage are within the boundary of the insurance contracts purchased by policyholders. The IASB staff concluded that the right of an entity to cancel coverage at any time means that the entity does not have a substantive obligation to provide future service related to the free additional insurance coverage. The expected cash flows related to future free additional insurance coverage are, therefore, not included in the boundary of the insurance contract and are not included in the liability for remaining coverage. If the entity has a substantive obligation for the free additional insurance coverage that has already been provided, such as unpaid claims, the cash flows related to that coverage are within the boundary of the contract and are included in the liability for incurred claims.

Question 9-5: Are cash flows within the boundary of a group insurance contract, if those cash flows relate to periods after the entity can cancel the group insurance policy? [TRG meeting September 2018 – Agenda paper no. 08, Log S61]

The TRG members considered an IASB staff paper which discussed a submission about the boundary of a contract for an agreement between an entity and an association or bank (referred to as a group insurance policy),

under which the entity provides insurance coverage to members of an association or to customers of a bank (referred to as 'certificate holders').

In the case of group association policies, the insurance entity has a policy with an association or bank to sell insurance coverage to individual members or customers. Although the legal contract is between the entity and the association or bank, the insurance coverage for each certificate holder is priced as if it were an individual contract. In the case of group creditor policies with a bank, the entity can sell insurance coverage to individual customers of the bank. These policies have the same facts and circumstances as the group association policy, other than insurance cover being linked to the remaining outstanding balance of the loan or mortgage issued by the bank to the certificate holder. The entity pays the remaining outstanding loan balance to the bank when an insured event occurs (rather than the certificate holder or their beneficiaries who are liable for paying the outstanding balances). In the fact pattern submitted, the entity can terminate the policy with a 90-day notice period. In such arrangements, the question arises as to whether the cash flows related to periods after the notice period of 90 days are within the boundary of an insurance contract and is the policyholder the bank or association or is it the individual certificate holders.

The TRG members agreed with the analysis and conclusion of the staff paper including the steps that an entity should perform in its analysis and observed that:

- For group insurance policies an entity should consider whether the policyholder is the association or bank, or the certificate holders. This is the case regardless of whether that compensation is received directly or indirectly by paying amounts on the policyholder's behalf
- For group insurance policies, an entity should consider whether the arrangement reflects a single insurance contract or multiple insurance contracts (i.e., with each certificate holder). Rebutting the presumption that the contract is a single contract by separating components requires judgement and careful consideration of all facts and circumstances (see 5.1.1 above)
- For the group insurance policies described in the submission, the following facts and circumstances are indicative that the arrangement reflects multiple insurance contracts (i.e., an insurance contract with each certificate holder) for the purpose of applying IFRS 17:
- The insurance coverage is priced and sold separately
- Other than being members of the association or customers of the bank the individuals are not related to one another
- Purchase of the insurance coverage is an option for each individual

An entity should assess the boundary of each insurance contract. For the group insurance policies described in the submission, the entity's substantive obligation to provide services under the contract ends at the point the entity can terminate the contract. This means that, in these examples, the substantive obligation ends after 90 days and cash flows within the boundary are those related to the obligation to provide services over the 90-day period. The certificate holder's expectation that the group insurance policy will not be terminated earlier than the contract term is not relevant to the assessment of the contract boundary.

The TRG members also observed that, in practice, there are many group insurance contracts with different terms and the assessment of whether a group insurance policy arrangement reflects a single insurance contract or multiple insurance contracts should be applied to group insurance policies considering all relevant facts and circumstances.

Illustration 30 – Contract boundary of a stepped premium life insurance contract

An entity issues a group of annual insurance contracts which provide cover for death, and total and permanent disablement. The cover is guaranteed renewable every year (i.e., the entity must accept renewal) for twenty years regardless as to changes in health of the insured. However, the premiums increase annually with the age of the policyholder and the insurer may increase premium rates annually provided that the increase is applied to the entire portfolio of contracts (premium rates for an individual policyholder cannot be increased after the policy is underwritten).

Analysis

The contract boundary is one year.

The guaranteed renewable basis means that the entity has a substantive obligation to provide the policyholder with services. However, the substantive obligation ends at the end of each year. This is because the entity has the practical ability to reassess the risks of the portfolio that contains the contract. Therefore, the entity can set a price that reflects the risk of that portfolio and the pricing of the premiums for coverage up to the date when the risks are reassessed do not take into account the risks that relate to premiums after the reassessment date (as premiums are adjusted annually for age). Therefore, both criteria mentioned above are satisfied.

Illustration 31 – Contract boundary of a level premium life insurance contract

An entity issues a group of insurance contracts which provide cover for death, and total and permanent disablement. The cover is guaranteed renewable (i.e., the entity must accept renewal) for twenty years regardless as to changes in health of the insured. The premium rates are level for the life of the policy irrespective of policyholder age. Therefore, the insurer will generally 'overcharge' younger policyholders and 'undercharge' older policyholders. In addition, the insurer may increase premium rates annually provided that the increase is applied to the entire portfolio of contracts (premium rates for an individual policyholder cannot be increased after the policy is underwritten).

Analysis

The contract boundary is twenty years.

The guaranteed renewable basis means that the entity has a substantive obligation to provide the policyholder with services. The substantive obligation does not end until the period of the guaranteed renewable basis expires. Although the entity has the practical ability to reassess the risks of the portfolio that contains the contract and, therefore, can set a price that reflects the risk of that portfolio, the pricing of the premiums does take into account the risks that relate to premiums after the reassessment date. The entity charges premiums in the early years to recover the expected cost of death claims in later years. Therefore, the second criterion in (b)(ii) above for drawing a shortened contract boundary when an entity can reassess the premiums or benefits for a portfolio of insurance contracts is not satisfied.

How we see it

- In determining the contract boundary, an entity should consider the longer of the following two periods:
 - The period it can compel the policyholder to pay premiums
 - The period after which it has the practical ability to reassess the risks (individual and portfolio level)
- The outer limit of the contract boundary will often be the point in time when the entity has the practical ability to reassess the risks as contract terms that would result in the entity being able to compel the policyholder to pay premiums over a longer period are not expected to be common in practice.
- Establishing the boundary of a contract is crucial as it determines the cash flows that will be included in its measurement. Drawing a contract boundary at the point where the entity has the practical ability to reprice (or amend the benefits under the contract) to fully reflect the risks of the policyholder may not reflect the entity's expectations about future cash flows from renewals. This could result in contracts being reported as onerous even when an insurer expects to recover all costs from future renewals.
- An entity's ability to reprice an individual insurance contract (and a policyholder's option not to renew the contract) creates a contract boundary. This means that, if premiums are received from the

policyholder after the contract boundary date (i.e., the contract continues beyond the boundary period) this will be treated as the recognition of a new contract – even if the rights and obligations of the entity and the policyholder are included within the single original policy document. The result would be that payments and related future cash flows will be recognised as new separate contracts. This is likely to result in a change from how entities deal with future premiums under current practices.

9.1.1. Options to add insurance coverage

As discussed in Section 3 above (see Section 3.6), for some contracts, the transfer of insurance risk to the issuer occurs after a period of time. For example, consider a contract that provides a specified investment return and includes an option for the policyholder to use the proceeds of the investment on maturity to buy a life-contingent annuity at the same rates the entity charges other new annuitants at the time the policyholder exercises that option. Such a contract transfers insurance risk to the issuer only after the option is exercised, because the entity remains free to price the annuity on a basis that reflects the insurance risk that will be transferred to the entity at that time. Consequently, the cash flows that would occur on the exercise of the option fall outside the boundary of the contract, and before exercise, there are no insurance cash flows within the boundary of the contract. However, if the contract specifies the annuity rates (or a basis other than market rates for setting the annuity rates), the contract transfers insurance risk to the issuer because the issuer is exposed to the risk that the annuity rates will be unfavourable to the issuer when the policyholder exercises the option. In that case, the cash flows that would occur when the option is exercised are within the boundary of the contract.²⁰⁰

Frequently asked questions

Question 9-5: How should an option to add coverage to an existing coverage on terms that are not guaranteed be accounted for? [TRG meeting May 2018 – Agenda paper no. 03, Log S36]

The TRG discussed an IASB staff paper that analysed how to determine the contract boundary of insurance contracts that include an option to add insurance coverage at a later date. The TRG members observed that:

- An option to add insurance coverage at a future date is a feature of the insurance contract
- An entity should focus on substantive rights and obligations arising from that option to determine whether the cash flows related to the option are within or outside the contract boundary
- Unless the entity considers that an option to add coverage at a future date is a separate contract, the option is an insurance component that is not measured separately from the remainder of the insurance contract

²⁰⁰ IFRS 17.B24.

- If an option to add insurance coverage is not a separate contract and the terms are guaranteed by the entity, the cash flows arising from the option would be within the boundary of the contract because the entity cannot reprice the contract to reflect the reassessed risks when it has guaranteed the price for one of the risks included in the contract
- If an option to add insurance coverage is not a separate contract and the terms are not guaranteed by the entity, the cash flows arising from the option might be either within or outside of the contract boundary, depending on whether the entity has the practical ability to set a price that fully reflects the reassessed risks of the entire contract. The analysis in the IASB staff paper: (i) assumed that the option to add insurance coverage at a future date created substantive rights and obligations; and (ii) noted that, if an entity does not have the practical ability to reprice the whole contract when the policyholder exercises the option to add coverage, the cash flows arising from the premiums after the option exercise date would be within the contract boundary. The TRG members expressed different views about whether an option with terms that are not guaranteed by the entity would create substantive rights and obligations
- If the cash flows arising from an option to add coverage at a future date are within the contract boundary, the measurement of a group of insurance contracts is required to reflect, on an expected value basis, the entity's current estimates of how the policyholders in the group will exercise the option

Question 9-6: Which are the cash flows within the boundary of each of two specific fact patterns of health insurance contracts for which the policyholder has a right to terminate a contract, which results in its lapse, and a right to reinstate the contract? [TRG meeting April 2019 – Agenda paper no. 02, Log S126]

The submission describes two specific fact patterns of health insurance contracts for which the policyholder has a right to terminate a contract, which results in its lapse, and a right to reinstate the contract. The policyholder's right to reinstate the contract is either exercised by paying the premiums that were not paid since the contract has lapsed until the reinstatement date or by exercising an option that the policyholder acquired after the contract has lapsed. In the latter case, the option is repriced annually based on the latest mortality table. In both cases, when the insurance contract is reinstated, it is reinstated without further underwriting or repricing of the premiums.

The IASB staff declined to provide further analysis of the specific transaction, but observed that an entity should assess whether its substantive obligation to provide services ends when a contract with such features lapses applying the criteria set out at 9.1 above (and discussed further above) and that cash flows related to the unexpired portion of the coverage period, such as the expected reinstatement of contracts, are part of the liability for remaining coverage.

9.1.2. Constraints or limitations relevant in assessing repricing

An entity has the practical ability to set a price at a future date (a renewal date) that fully reflects the risk in the contract from that date, in the absence of constraints that prevent the entity from setting the same price it would for a new contract with the same characteristics as the existing contract issued on that date, or if it can amend the benefits to be consistent with the price it will charge. Similarly, an entity has the practical ability to set a price when it can reprice an existing contract so that the price reflects overall changes in the risks in a portfolio of insurance contracts, even if the price set for each individual policyholder does not reflect the change in risk for that specific policyholder. When assessing whether the entity has the practical ability to set a price that fully reflects the risks in the contract or portfolio, it should consider all the risks that it would consider when underwriting equivalent contracts on the renewal date for the remaining service. In determining the estimates of future cash flows at the end of a reporting period, an entity should reassess the boundary of an insurance contract to include the effect of changes in circumstances on the entity's substantive rights and obligations.

Frequently asked questions

Question 9-7: What constraints or limitations, other than those arising from the terms of an insurance contract, would be relevant in assessing the practical ability of an entity to reassess the risks of the particular policyholder (or of the portfolio of insurance contracts that contains the contract) and set a price or level of benefits that fully reflects those risks? [TRG meeting May 2018 – Agenda paper no. 03, Log S43 and S49]

The TRG members observed that:

- A constraint that equally applies to new contracts and existing contracts would not limit an entity's practical ability to reprice existing contracts to reflect their reassessed risks
- When determining whether it has the practical ability to set a price at a future date that fully reflects the reassessed risks of a contract or portfolio, an entity must (i) consider contractual, legal and regulatory restrictions; and (ii) disregard restrictions that have no commercial substance
- IFRS 17 does not limit pricing constraints to contractual, legal and regulatory constraints. Market competitiveness and commercial considerations are factors that an entity typically considers when pricing new contracts and repricing existing contracts. As such, sources of constraints may also include market competitiveness and commercial considerations, but constraints are irrelevant to the contract boundary if they apply equally to new and existing policyholders in the same market
- A constraint that limits an entity's practical ability to price or reprice contracts differs from choices that an entity makes (pricing decisions) which may not limit the entity's practical ability to reprice existing contracts in the way envisaged by paragraph B64 of IFRS 17

The TRG members also observed that an entity should apply judgement to decide whether commercial considerations are relevant when considering the contract boundary requirements of IFRS 17.

9.1.3. Contract boundary matters related to insurance acquisition cash flows

As discussed at 7.3 above, in some circumstances, an insurer may pay insurance acquisition cash flows on insurance contracts which are expected to last for many years but where the contract boundary is much shorter. For example, an insurer may pay significant up-front insurance acquisition cash flows in the first year of a contract on the basis that the contract will last for a number of years, but the contract boundary may be only one year (e.g., because of the reasons explained in Illustration 30 above). In some cases, part of the commission is refundable from the agent if the future renewals do not occur as expected. In other circumstances, the commission is not refundable.

As a result of the June 2020 amendments, IFRS 17 requires an entity to allocate insurance acquisition cash flows to groups of insurance contracts using a systematic and rational method unless, as permitted under the premium allocation approach (see 10.1 below), it chooses to recognise them as an expense.²⁰¹ The systematic and rational method should be used to allocate:²⁰²

- Insurance acquisition cash flows directly attributable to a group of insurance contracts:
 - To that group
 - To groups that will include insurance contracts that are expected to arise from renewals of the insurance contracts in that group
- Insurance acquisition cash flows directly attributable to a portfolio of insurance contracts, other than those in the bullet points above, to groups of contracts in that portfolio

At the end of each reporting period, an entity must revise amounts allocated to each group using the systematic and rational method specified above to reflect any changes in assumptions that determine the inputs to the method of allocation used. The entity must not change amounts allocated to a group of insurance contracts after all contracts have been added to the group.²⁰³

A distinction can be made when an insurer has paid an intermediary separately for exclusivity or future services as these costs are not attributable to an insurance contract and these payments would be outside the scope of IFRS 17 and may be within the scope of another IFRS.

See Section 11.2 for a discussion on matters related to the assessment of contract boundary, specifically as they relate to reinsurance contracts held.

9.2. Estimates of expected future cash flows

The first element of the building blocks in the general model discussed at 8 above is an estimate of the future cash flows over the life of each contract.

²⁰¹ IFRS 17.28A.

²⁰² IFRS 17.B35A.

²⁰³ IFRS 17.B35B.

This assessment should include all the future cash flows within the boundary of each contract (see 9.1 above).²⁰⁴ However, the fulfilment cash flows should not reflect the non-performance risk (i.e., own credit) of the entity.²⁰⁵ As discussed at 6 above, an entity is permitted to estimate the future cash flows at a higher level of aggregation than a group and then allocate the resulting fulfilment cash flows to individual groups of contracts.

The estimates of future cash flows should:²⁰⁶

- Incorporate, in an unbiased way, all reasonable and supportable information available without undue cost or effort about the amount, timing and uncertainty of those future cash flows. To do this, an entity should estimate the expected value (i.e., the probability-weighted mean) of the full range of possible outcomes
- Reflect the perspective of the entity, provided that the estimates of any relevant market variables are consistent with observable market prices for those variables (see 9.2.1 below)
- Be current the estimates should reflect conditions existing at the measurement date, including assumptions at that date about the future (see 9.2.2 below)
- Be explicit the entity should estimate the adjustment for non-financial risk separately from the other estimates. The entity also should estimate the cash flows separately from the adjustment for the time value of money and financial risk, unless the most appropriate measurement technique combines these estimates (see 9.4 below)

The objective of estimating future cash flows is to determine the expected value, or 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. Reasonable and supportable information available at the reporting date without undue cost or effort includes information about past events and current conditions, and forecasts of future conditions. Information available from an entity's own information systems is considered to be available without undue cost or effort.²⁰⁷

The starting point for an estimate of future cash flows is a range of scenarios that reflects the full range of possible outcomes. Each scenario specifies the amount and timing of the cash flows for a particular outcome, and the estimated probability of that outcome. The cash flows from each scenario are discounted and weighted by the estimated probability of that outcome to derive an expected present value. Consequently, the objective is not to develop a most likely outcome, or a more-likely-than-not outcome, for future cash flows.²⁰⁸

When considering the full range of possible outcomes, the objective is to incorporate all reasonable and supportable information available without undue cost or effort in an unbiased way, rather than to identify every possible scenario. In practice, developing explicit scenarios is unnecessary if the

²⁰⁴ IFRS 17.33.

²⁰⁵ IFRS 17.31.

²⁰⁶ IFRS 17.33.

²⁰⁷ IFRS 17.B3.7

²⁰⁸ IFRS 17.B38.

resulting estimate is consistent with the measurement objective of considering all reasonable and supportable information available without undue cost or effort when determining the mean. For example, if an entity estimates that the probability distribution of outcomes is broadly consistent with a probability distribution that can be described completely with a small number of parameters, it will be sufficient to estimate the smaller number of parameters. Similarly, in some cases, relatively simple modelling may give an answer within an acceptable range of precision, without the need for many detailed simulations. However, in some cases, the cash flows may be driven by complex underlying factors and may respond in a non-linear fashion to changes in economic conditions. This may happen if, for example, the cash flows reflect a series of interrelated options that are implicit or explicit. In such cases, more sophisticated stochastic modelling is likely to be necessary to satisfy the measurement objective.²⁰⁹

The scenarios developed should include unbiased estimates of the probability of catastrophic losses under existing contracts. Those scenarios exclude possible claims under possible future contracts.²¹⁰

An entity should estimate the probabilities and amounts of future payments under existing contracts on the basis of information obtained including:²¹¹

- Information about claims already reported by policyholders
- Other information about the known or estimated characteristics of the insurance contracts
- Historical data about the entity's own experience, supplemented when necessary with historical data from other sources. Historical data is adjusted to reflect current conditions, for example, if:
 - The characteristics of the insured population differ (or will differ, for example, because of adverse selection) from those of the population that has been used as a basis for the historical data
 - There are indications that historical trends will not continue, that new trends will emerge, or that economic, demographic and other changes may affect the cash flows that arise from the existing insurance contracts

Or

- There have been changes in items such as underwriting procedures and claims management procedures that may affect the relevance of historical data to the insurance contracts
- Current price information, if available, for reinsurance contracts and other financial instruments (if any) covering similar risks, such as catastrophe bonds and weather derivatives, and recent market prices for transfers of insurance contracts. This information should be adjusted to reflect the differences between the cash flows that arise from those reinsurance contracts or other financial instruments, and the cash flows that would arise as the entity fulfills the underlying contracts with the policyholder.

²⁰⁹ IFRS 17.B39.

²¹⁰ IFRS 17.B40.

²¹¹ IFRS 17.B41.

How we see it

- As a change to many accounting practices under IFRS 4, no explicit deferred acquisition cost assets existed for costs which relate to contracts that have already been recognised. Instead, the insurance acquisition cash flows were included as a "negative liability" within the measurement of the contractual service margin on initial recognition. Because the contractual service margin can never be negative for insurance contracts issued, there is no longer a need to perform any separate recoverability assessments for acquisition costs deferred once they have been included in the measurement of the group of insurance contracts. A recoverability assessment is necessary for the asset for insurance acquisition cash flows which relate to contracts not yet recognised (see section 9.10).
- Some accounting practices incorporate implicit margins for risk in a best estimate liability. For example, determining the liability for incurred claims based on an undiscounted management best estimate, which often incorporates conservatism or implicit prudence. IFRS 17 requires a change to this practice such that incurred claims liabilities must be measured at the discounted probability-weighted expected present value of the cash flows, plus an explicit risk adjustment. Entities will need to be more transparent in providing information about how liabilities related to insurance contracts are made up.
- Techniques such as stochastic modelling may be more robust or easier to implement if there are significant interdependencies between cash flows that vary based on returns on assets and other cash flows. Judgement is required to determine the technique that best meets the objective of consistency with observable market variables in specific circumstances.
- The estimates of future cash flows must be on an expected value basis and, therefore, should be unbiased. This means that they should not include any additional estimates above the probability-weighted mean for 'uncertainty', 'prudence' or what is sometimes described as a 'management loading'. Separately, a risk adjustment for non-financial risk (see 9.4 below) is determined to reflect the compensation for bearing the non-financial risk resulting from the uncertain amount and the timing of the cash flows.
- Consistent with IFRS 4, catastrophe provisions and equalisation provisions (provisions generally build up over years following a prescribed regulatory formula which are permitted to be released in years when claims experience is high or abnormal) are not permitted to the extent that they relate to contracts that are not in force at the reporting date (i.e., future claims would be outside the boundary of the existing contract). Although IFRS 17 prohibits the recognition of these provisions as a liability, it does not prohibit their segregation as a component of equity. Consequently, insurers are free to designate a proportion of their equity as an equalisation or catastrophe reserve. When a catastrophe or equalisation provision has a tax base, but is not recognised in the IFRS financial statements, then a taxable temporary difference will arise that should be accounted for under IAS 12 Income Taxes.
9.2.1. Market variables and non-market variables

IFRS 17 identifies two types of variable that can affect estimates of cash flow:²¹²

- Market variables (i.e., those that can be observed in, or derived directly from, markets (for example, prices of publicly traded securities and interest rates))
- Non-market variables (i.e., all other variables, such as the frequency and severity of insurance claims and mortality)

Market variables will generally give rise to financial risk (e.g., observable interest rates) and non-market variables will generally give rise to non-financial risk (for example, mortality rates). However, this will not always be the case, there may be assumptions that relate to financial risks for which variables cannot be observed in, or derived directly from, markets (e.g., interest rates that cannot be observed in, or derived directly from, markets).²¹³

9.2.1.A. Market variables

Market variables are variables that can be observed in, or derived directly from markets (e.g., prices of publicly traded securities and interest rates).

Estimates of market variables should be consistent with observable market prices at the measurement date. An entity should maximise the use of observable inputs and should not substitute its own estimates for observable market data except in the limited circumstances as permitted by IFRS 13.²¹⁴

Consistent with IFRS 13, if variables need to be derived (e,g., because no observable market variables exist) they should be as consistent as possible with observable market variables.²¹⁵

Market prices blend a range of views about possible future outcomes and also reflect the risk preferences of market participants. Consequently, they are not a single-point forecast of the future outcome. If the actual outcome differs from the previous market price, this does not mean that the market price was 'wrong'.²¹⁶

An important application of market variables is the notion of a replicating asset or a replicating portfolio of assets. A replicating asset is one whose cash flows exactly match, in all scenarios, the contractual cash flows of a group of insurance contracts in amount, timing and uncertainty. In some cases, a replicating asset may exist for some of the cash flows that arise from a group of insurance contracts. The fair value of that asset reflects both the expected present value of the cash flows from the asset and the risk associated with those cash flows. If a replicating portfolio of assets exists for some of the cash flows that arise from a group of insurance contracts, the entity can use the fair value of those assets to measure the relevant fulfilment cash flows instead of explicitly estimating the cash flows and discount rate.²¹⁷ IFRS 17 does not

- ²¹² IFRS 17.B42.
- ²¹³ IFRS 17.B43.
- ²¹⁴ IFRS 13.79.
- ²¹⁵ IFRS 17.B44.
 ²¹⁶ IFRS 17.B45.

²¹⁷ IFRS 17.B45.

require an entity to use a replicating portfolio technique. However, if a replicating asset or portfolio does exist for some of the cash flows that arise from insurance contracts and an entity chooses to use a different technique, the entity should satisfy itself that a replicating portfolio technique would be unlikely to lead to a materially different measurement of those cash flows.²¹⁸

Techniques other than a replicating portfolio technique, such as stochastic modelling techniques, may be more robust or easier to implement if there are significant interdependencies between cash flows that vary based on returns on assets and other cash flows. Judgement is required to determine the technique that best meets the objective of consistency with observable market variables in specific circumstances. In particular, the technique used must result in the measurement of any options and guarantees included in the insurance contracts being consistent with observable market prices (if any) for such options and guarantees.219

Frequently asked questions

Question 9-8: Should 'risk neutral' or 'real world' scenarios be used for stochastic modelling techniques to project future returns on assets, applying paragraph B48 of IFRS 17? [TRG meeting May 2018 - Agenda paper no. 07, Log S14]

The IASB staff responded to a submission to the TRG which asked whether 'risk neutral' or 'real world' scenarios should be used in stochastic modelling when, for example, measuring options and guarantees. Real world scenarios are those based on an assumed distribution that is intended to reflect realistic assumptions about actual future asset returns. Risk neutral scenarios are those based on an underlying assumption that, on average, all assets earn the same risk-free return. A risk neutral approach uses a range of scenarios reflecting the assumed volatility of returns for an asset price consistent with volatility implied by option prices. The IASB staff clarified that IFRS 17 does not require an entity to divide estimated cash flows into those that vary based on the returns on underlying items and those that do not (see 8.3 below) and, if not divided, the discount rate should be appropriate for the cash flows as a whole. The IASB staff observed that any consideration beyond this is actuarial (i.e., operational measurement implementation) in nature and, therefore, does not fall within the remit of the TRG. The TRG members did not disagree with the IASB staff's observations.

How we see it

The application guidance is clear that although market variables will generally provide a measurement basis for financial risks (e.g., observable interest rates) this will not always be the case. The same is true for nonfinancial risks and non-market variables. For example, some non-financial risks could be observable in markets, whereas not all financial risks will be observable.

²¹⁸ IFRS 17.B47. ²¹⁹ IFRS 17.B48.

 In practice, we believe that the use of a replicating portfolio approach is likely to be rare as IFRS 17 refers to the need to consider the approach only when an asset exists whose cash flows exactly match those of the liability (or a portion thereof).

9.2.1.B. Non-market variables

Non-market variables are all other variables (other than market variables) such as the frequency and severity of insurance claims and mortality.

Estimates of non-market variables should reflect all reasonable and supportable evidence available without undue cost or effort, both external and internal.²²⁰

Non-market external data (e.g., national mortality statistics) may have more or less relevance than internal data (e.g., internally developed mortality statistics), depending on the circumstances. For instance, an entity that issues life insurance contracts should not rely solely on national mortality statistics, but should consider all other reasonable and supportable internal and external sources of information available without undue cost or effort when developing unbiased estimates of probabilities for mortality scenarios for its insurance contracts. In developing those probabilities, an entity should give more weight to the more persuasive information. For example:²²¹

- Internal mortality statistics may be more persuasive than national mortality data if national data is derived from a large population that is not representative of the insured population. This could be because the demographic characteristics of the insured population could significantly differ from those of the national population, meaning that an entity would need to place more weight on the internal data and less weight on the national statistics.
- Conversely, if the internal statistics are derived from a small population with characteristics that are believed to be close to those of the national population, and the national statistics are current, an entity should place more weight on the national statistics.

Estimated probabilities for non-market variables should not contradict observable market variables. For example, estimated probabilities for future inflation rate scenarios should be as consistent as possible with probabilities implied by market interest rates.²²²

In some cases, an entity may conclude that market variables vary independently of non-market variables. If so, the entity should consider scenarios that reflect the range of outcomes for the non-market variables, with each scenario using the same observed value of the market variable.²²³

In other cases, market variables and non-market variables may be correlated. For example, there may be evidence that lapse rates (a non-market variable) are correlated with interest rates (a market variable). Similarly, there may be

²²⁰ IFRS 17.B49.

²²¹ IFRS 17.B50.

²²² IFRS 17.B51.

²²³ IFRS 17.B52.

evidence that claim levels for house or car insurance are correlated with economic cycles and, therefore, with interest rates and expense amounts. The entity should ensure that the probabilities for the scenarios and the risk adjustments for the non-financial risk that relates to the market variables are consistent with the observed market prices that depend on those market variables.²²⁴

Illustration 32 – Persuasiveness of internal and national mortality statistics

An entity that issues life insurance contracts should not rely solely on national mortality statistics. It should consider all other reasonable and supportable internal and external information available without undue cost or effort when developing unbiased estimates of probabilities for mortality scenarios for its insurance contracts. For example:

Internal mortality statistics may be more persuasive than national mortality data if national data is derived from a large population that is not representative of the insured population.

Conversely, if the internal statistics are derived from a small population with characteristics that are believed to be close to those of the national population, and the national statistics are current, an entity should place more weight on the national statistics.

9.2.2. Using current estimates

In estimating each cash flow scenario and its probability, an entity should use all reasonable and supportable information available without undue cost or effort.²²⁵ Undue cost and effort is discussed at 17.4 below.

An entity should review the estimates that it made at the end of the previous reporting period and update them. In doing so, an entity should consider whether:²²⁶

The updated estimates faithfully represent the conditions at the end of the reporting period

Or

The changes in estimates faithfully represent the changes in conditions during the period. For example, suppose that estimates were at one end of a reasonable range at the beginning of the period. If the conditions have not changed, shifting the estimates to the other end of the range at the end of the period would not faithfully represent what has happened during the period. If an entity's most recent estimates are different from its previous estimates, but conditions have not changed, it should assess whether the new probabilities assigned to each scenario are justified. In updating its estimates of those probabilities, the entity should consider both the

²²⁴ IFRS 17.B53.

²²⁵ IFRS 17.B54

²²⁶ IFRS 17.B54

evidence that supported its previous estimates and all newly available evidence, giving more weight to the more persuasive evidence.

The probability assigned to each scenario should reflect the conditions at the end of the reporting period. Consequently, applying IAS 10 *Events after the Reporting Period*, an event occurring after the end of the reporting period that resolves an uncertainty that existed at the end of the reporting period does not provide evidence of the conditions that existed at that date. For example, there may be a 20 per cent probability at the end of the reporting period that a major storm will strike during the remaining six months of an insurance contract. After the end of the reporting period but before the financial statements are authorised for issue, a major storm occurs. The fulfilment cash flows under that contract should not reflect the storm that, with hindsight, is known to have occurred. Instead, the cash flows included in the measurement include the 20 per cent probability apparent at the end of the reporting period (with disclosure (applying IAS 10) that a non-adjusting event occurred after the end of the reporting period).²²⁷

Current estimates of expected cash flows are not necessarily identical to the most recent actual experience. For example, suppose that mortality experience in the reporting period was 20 per cent worse than the previous mortality experience and previous expectations of mortality experience. Several factors could have caused the sudden change in experience, including:²²⁸

- Lasting changes in mortality
- Changes in the characteristics of the insured population (for example, changes in underwriting or distribution, or selective lapses by policyholders in unusually good health)
- Random fluctuations
- Identifiable non-recurring causes

An entity should investigate the reasons for the change in experience and develop new estimates of cash flows and probabilities in the light of the most recent experience, the earlier experience and other information. The result for the example above, when mortality experience worsened by 20 per cent in the reporting period, would typically be that the expected present value of death benefits changes, but not by as much as 20 per cent. However, if mortality rates continue to be significantly higher than the previous estimates for reasons that are expected to continue, the estimated probability assigned to the high-mortality scenarios will increase.²²⁹

Estimates of non-market variables should include information about the current level of insured events and information about trends. For example, mortality rates have consistently declined over long periods in many countries. The determination of the fulfilment cash flows reflects the probabilities that would be assigned to each possible trend scenario, taking account of all reasonable and supportable information available without undue cost or effort.²³⁰

²²⁷ IFRS 17.B55

²²⁸ IFRS 17.B56.

²²⁹ IFRS 17.B57.

²³⁰ IFRS 17.B58.

In a similar manner, if cash flows allocated to a group of insurance contracts are sensitive to inflation, the determination of the fulfilment cash flows should reflect current estimates of possible future inflation rates. Because inflation rates are likely to be correlated with interest rates, the measurement of fulfilment cash flows should reflect the probabilities for each inflation scenario in a way that is consistent with the probabilities implied by the market interest rates used in estimating the discount rate (see 9.2.1.A above).²³¹

When estimating the cash flows, an entity should take into account current expectations of future events that might affect those cash flows. The entity should develop cash flow scenarios that reflect those future events, as well as unbiased estimates of the probability of each scenario. However, an entity should not take into account current expectations of future changes in legislation that would change or discharge the present obligation or create new obligations under the existing insurance contract until the change in legislation is substantively enacted.²³²

Illustration 33 – Faithful representation of conditions at the reporting date and changes in the period

If conditions have not changed in a period, shifting a point estimate from one end of a reasonable range at the beginning of the period to the other end of the range at the end of the period would not faithfully represent what has happened during the period.

If the most recent estimates are different from previous estimates, but conditions have not changed, an entity should assess whether the new probabilities assigned to each scenario are justified. In updating its estimates of those probabilities, the entity should consider both the evidence that supported its previous estimates and all newly available evidence, giving more weight to the more persuasive evidence.

An entity should not update probabilities for claim events to reflect actual claims that took place after the reporting date but before the financial statements are finalised. For example, there may be a 20% probability at the end of the reporting period that a major storm will strike during the remaining six months of an insurance contract. After the end of the reporting period, but before the financial statements are authorised for issue, a major storm strikes. The fulfilment cash flows under that contract should not reflect hindsight (i.e., the storm that occurred in the next period). Instead, the cash flows included in the measurement should include the 20% probability apparent at the end of the reporting period (with disclosure, applying IAS 10, that a non-adjusting event occurred after the end of the reporting period).²³³

9.2.3. Cash flows within the contract boundary

As discussed at 9.1 above, estimates of cash flows should include all cash flows within the boundary of an insurance contract and in determining the contract boundary, an entity should consider its substantive rights and obligations and whether those rights and obligations arise from contract, law or regulation.

²³¹ IFRS 17.B59.

²³² IFRS 17.B60.

²³³ IFRS 17.B55 and IAS 10.10-11.

Many insurance contracts have features that enable policyholders to take actions that change the amount, timing, nature or uncertainty of the amounts they will receive. Such features include renewal options, surrender options, conversion options and options to stop paying premiums while still receiving benefits under the contracts. The measurement of a group of insurance contracts should reflect, on an expected value basis, the entity's current estimates of how the policyholders in the group will exercise the options available, and the risk adjustment for non-financial risk (see 9.4 below) should reflect the entity's current estimates of how the actual behaviour of the policyholders may differ from the expected behaviour. This requirement to determine the expected value applies regardless of the number of contracts in a group; for example it applies even if the group comprises a single contract. Thus, the measurement of a group of insurance contracts should not assume a 100 per cent probability that policyholders will:²³⁴

 Surrender their contracts, if there is some probability that some of the policyholders will not

Or

 Continue their contracts, if there is some probability that some of the policyholders will not

The Basis for Conclusions states that IFRS 17 does not require or allow the application of a deposit floor when measuring insurance contracts. If a deposit floor were to be applied, the resulting measurement would ignore all scenarios other than those involving the exercise of policyholder options in the way that is least favourable to the entity. This would contradict the principle that an entity should incorporate in the measurement of an insurance contract future cash flows on a probability-weighted basis.²³⁵ The expected cash outflows include outflows over which the entity has discretion.²³⁶ The Board considered whether payments that are subject to the entity's discretion meet the definition of a liability in the *Conceptual Framework for Financial Reporting* (the Conceptual Framework). The contract, when considered as a whole, clearly meets the Conceptual Framework's definition of a liability. However, in the Board's view, including such components in the measurement of insurance contracts would generate more useful information for users of financial statements.²³⁷

Cash flows within the boundary of an insurance contract are those that relate directly to the fulfilment of the contract, including cash flows for which the entity has discretion over the amount or timing. IFRS 17 provides the following examples of such cash flows:²³⁸

- Premiums see 9.2.3.A below
- Payments, including claims, to a policyholder see 9.2.3.B below

²³⁷ IFRS 17.BC169.

²³⁴ IFRS 17.B62.

²³⁵ IFRS 17.BC166.

²³⁶ IFRS 17.BC168.

²³⁸ IFRS 17.B65.

- Payments to a policyholder that vary based on underlying items see 9.2.3.C below
- Payments to a policyholder resulting from derivatives see 9.2.3.D below
- Insurance acquisition cash flows see 9.2.3.E below
- Claims handling costs see 9.2.3.F below
- Costs incurred in providing contractual benefits in kind see 9.2.3.G below
- Policy administration and maintenance costs see 9.2.3.H below
- Transaction-based taxes and levies see 9.2.3.1 below
- Payments by the insurer of tax in a fiduciary capacity see 9.2.3.J below
- Potential cash inflows from recoveries see 9.2.3.K below
- An allocation of fixed and variable overheads see 9.2.3.L below
- Costs the entity will incur in providing an investment activity, an investment-return service or an investment-related service - see 9.2.3.M below
- Any other costs specifically chargeable to the policyholder see 9.2.3.N below

The Board decided not to include only insurance cash flows that are incremental at a contract level as that would mean that entities would recognise different contractual service margins and expenses depending on the way they structure their acquisition activities.²³⁹ For example, different liabilities would be reported if the entity had an internal sales department rather than outsourcing sales to external agents as the costs of an internal sales department, such as fixed salaries, are less likely to be incremental than amounts paid to an agent.

At initial recognition of an insurance contract, the fulfilment cash flows will include estimates for these cash flows. Subsequently, as services are provided under the contract, the liability for remaining coverage is reduced and insurance revenue is recognised except for those changes that do not relate to services provided in the period (premiums received, investment component changes, changes related to transaction-based taxes, insurance finance income or expenses, and insurance acquisition cash flows). See 15.2.1 below.

Frequently asked questions

Question 9-9: Are cash flows still within the boundary of the contract if those cash flows relate to periods when insurance coverage is no longer provided and where the policyholder bears all the risks related to the investment services? [TRG meeting September 2018 – Agenda paper no. 11, Log S79]

The submission considered, in particular, whether cash flows should be considered to be within the boundary of the contract if those cash flows arise in periods in which the investment component exists but no insurance coverage is provided. The IASB staff observed that cash flows within the

²³⁹ IFRS 17.BC182(a).

Frequently asked questions (cont'd)

boundary of a contract may relate to periods in which coverage is no longer provided, such as when claims are expected to be settled in the future that relate to premiums that were within the boundary of the contract. Periods of coverage may also be outside the boundary of a contract if, for example, an entity can fully reprice premiums.

How we see it

The list of examples of cash flows within the boundary of an insurance contract is more extensive than permitted under many local GAAPs (and, hence, applied previously under IFRS 4). For example, some local GAAPs permit only incremental costs to be included. Some local GAAPs also permit entities an accounting policy choice in whether or not to treat certain costs as insurance acquisition cash flows (and, hence, deferred over the policy period). IFRS 17 does not allow a choice as to whether or not to include these cash flows that are within the boundary of the insurance contract.

9.2.3.A. Premium cash flows

Premium cash flows include premium adjustments, instalment premiums from a policyholder and any additional cash flows that result from those premiums.

Some insurance contracts charge a higher premium to policyholders who pay by (say) monthly instalments compared to those who pay a single amount on policy inception. The increased amount billed to those paying by instalments may include an implicit interest charge. Under IFRS 4, accounting practices for the higher premium charged to those who pay by instalments have been diverse. Under IFRS 17, the fulfilment cash flows arising from any incremental premium chargeable to policyholders is insurance revenue as it does not meet the definition of insurance finance income or expenses (see 15.3 below) nor is it a distinct non-insurance service as the insurance and financing is not usually sold separately (see 5.3 above).

9.2.3.B. Payments to (or on behalf of) a policyholder

These payments include claims that have already been reported but have not yet been paid (i.e., reported claims), incurred claims for future events that have occurred but for which claims have not been reported (i.e., incurred but not reported (IBNR) claims) and all future claims for which an entity has a substantive obligation.

9.2.3.C. Payments to (or on behalf of) a policyholder that vary depending on returns on underlying items

Some insurance contracts give policyholders the right to share in the returns on specified underlying items. Underlying items are items that determine some of the amounts payable to a policyholder. Underlying items can comprise any

items, e.g., a reference portfolio of assets, the net assets of the entity, or a specified subset of the net assets of the entity.²⁴⁰

Payments to policyholders that vary depending on returns from underlying items are found most frequently in contracts with participation features. These are discussed at 12 below.

9.2.3.D. Payments to (or on behalf of) a policyholder resulting from derivatives

Examples of such derivatives include options and guarantees embedded into the contract, to the extent that those options and guarantees are not separated from the contract (see 5.1 above).

9.2.3.E. Insurance acquisition cash flows

These cash flows comprise an allocation of insurance acquisition cash flows attributable to the portfolio to which the contract belongs.

There is no restriction on insurance acquisition cash flows to those resulting from successful efforts. So, for instance, the directly attributable costs of an underwriter of a portfolio of motor insurance contracts do not need to be apportioned between those costs relating to efforts that result in the issuance of a contract and those relating to unsuccessful efforts. The Basis for Conclusions observes that the Board considered whether to restrict insurance acquisition cash flows included in the measurement of a group of insurance contracts to those cash flows directly related to the successful acquisition of new or renewed insurance contracts. However, it was concluded that this was not consistent with an approach that measured profitability of a group of contracts over the duration of the group and, in addition, the Board wanted to avoid measuring liabilities and expenses at different amounts depending on how an entity structures its insurance activities.²⁴¹

Changes in estimates of insurance acquisition cash flows are adjusted against the liability for remaining coverage, but do not adjust insurance revenue as they do not relate to services provided by the entity.²⁴² Separately, insurance revenue related to insurance acquisition cash flows is determined by allocating (or amortising) the portion of the premiums that relates to recovering these cash flows to each reporting period in a systematic way on the basis of passage of time, with a corresponding entry to insurance service expenses (i.e., DR insurance service expense, CR insurance revenue).²⁴³ See 15.2.1 below.

How we see it

Insurance acquisition cash flows can also include an allocation of fixed and variable overheads, mentioned under 9.2.3.L below, that can be attributed, on a systematic and rationale basis, to the portfolio of insurance contracts as insurance acquisition cash flows.

²⁴⁰ IFRS 17 Appendix A.

²⁴¹ IFRS 17.BC183.

²⁴² IFRS 17.B123.

²⁴³ IFRS 17.B125.

9.2.3.F. Claims handling costs

These are costs that an entity will incur in investigating, processing and resolving claims under existing insurance contracts (as opposed to claim payments to policyholders - see 9.2.3.B above). Claims handling costs include legal and loss adjusters' fees and the internal costs of investigating claims and processing claims payments.

9.2.3.G. Costs incurred in providing contractual benefits in kind

These costs are those related to the type of payments in kind discussed at 3.3 above.

9.2.3.H. Policy administration and maintenance costs

These costs include the costs of billing premiums and handling policy changes (for example, conversions and reinstatements). Such costs also include recurring commissions that are expected to be paid to intermediaries if a particular policyholder continues to pay the premiums within the boundary of the insurance contract.

9.2.3.1. Transaction-based taxes

These include such taxes as premium tax, value added taxes and goods and service taxes and levies (such as fire service levies and guarantee fund assessments) that arise directly from existing insurance contracts, or that can be attributed to them on a reasonable and consistent basis. See also 9.2.3.J below.

Premium or sales taxes are typically billed to the policyholder and then passed onto the tax authorities with the insurer usually acting as an agent for the tax authorities. The cash flows within the contract boundary would, therefore, include both the tax in-flow and the tax out-flow. Guarantee fund or similar assessments are usually billed to the insurer directly based on a calculation made by the tax authority often derived from the insurer's market share of particular types of insurance business. There is usually only a cash out-flow for these assessments.

Changes in cash flows that relate to transaction-based taxes collected on behalf of third parties (such as premium taxes, value added taxes and goods and services taxes) adjust the liability for remaining coverage (i.e., are included within the balance of portfolios of insurance contracts included in the statement of financial position), but do not adjust insurance revenue as these do not relate to services expected to be covered by the consideration received by the entity.²⁴⁴

9.2.3.J. Payments by the insurer in a fiduciary capacity

These are payments (and related receipts) made by the insurer to meet tax obligations of the policyholder. In some jurisdictions, the insurer is required to make these payments (e.g., to pay the policyholder's tax on gains made on underlying items). Income tax obligations which are not paid in a fiduciary

²⁴⁴ IFRS 17.B123

capacity (e.g., the insurer's own income tax obligations) are not cash flows within the boundary of an insurance contracts. See 9.2.4 below.

9.2.3.K. Potential inflows from recoveries

Some insurance contracts permit the insurer to sell, usually damaged, property acquired in settling the claim (salvage). The insurer may also have the right to pursue third parties for payment of some or all costs (subrogation). Potential cash inflows from both salvage and subrogation are included with the cash flows of the boundary of an insurance contract and, to the extent that they do not qualify for recognition as separate assets, potential cash inflows from recoveries on past claims.

9.2.3.L. An allocation of fixed and variable overheads

Fixed and variable overheads included in the cash flows within the boundary of an insurance contract include the directly attributable costs of:

- Accounting
- Human resources
- Information technology and support
- Building depreciation
- Rent
- Maintenance and utilities

These overheads should be allocated to groups of contracts using methods that are systematic and rational and are consistently applied to all costs that have similar characteristics.

Other IFRSs govern the accounting treatment of some of the fixed or variable overheads, for example:

Fixed and variable overheads	Applicable IFRS
Human resources	IAS 19 Employee Benefits
Information technology	IAS 38 Intangible Assets
Depreciation	IAS 16 Property, Plant and Equipment / IFRS 16 Leases
Other allocated overhead amounts	IFRS 9 Financial Instruments

IFRS 17 will therefore interact with the recognition and measurement principles of other IFRSs. For example, an entity might include building depreciation costs in the fulfilment cash flows. The entity will determine depreciation costs over the period of the useful life of the building applying the requirements of IAS 16. The entity will include those expected costs in the fulfilment cash flows. When those costs are incurred, applying IAS 16 the entity will treat them as an incurred expense under IFRS 17, i.e., the entity will reduce the liability for remaining coverage, recognise an incurred insurance service expense and recognise revenue. See 15.2 below.

9.2.3.M. Costs incurred in providing investment activity, investmentreturn and investment-related services

These are costs the entity will incur:

- Performing investment activities, to the extent the entity performs these activities to enhance benefits from insurance coverage for policyholders. Investment activities enhance benefits from insurance coverage if the entity performs those activities expecting to generate an investment return from which policyholders will benefit if an insured event occurs
- Providing investment-return services to policyholders of insurance contracts without direct participation features (see 9.7.1 below)
- Providing investment-related services to policyholders of insurance contracts with direct participation features (see 11.5. below)

Investment activity costs that an entity incurs are included in the fulfilment cash flows to the extent that the entity incurs those costs to provide investment-return services or investment-related services. It is acknowledged in the Basis for Conclusions that an entity may also incur investment activity costs to enhance benefits from insurance coverage from customers. Therefore, IFRS 17, as amended in June 2020, specifies that an entity is required to include investment activity costs in the fulfilment cash flows to the extent that the entity performs those activities to enhance benefits from insurance coverage for policyholders. In determining whether investment activity costs enhance benefits from insurance coverage for policyholders, an entity needs to apply judgement in a similar manner to when it determines whether an investment-return service exists.²⁴⁵

Costs resulting from investment activity performed for the benefit of shareholders, rather than policyholders, are excluded from the list above. Therefore, it can be inferred by omission that the IASB does not consider shareholder-related investment costs to be fulfilment cash flows directly related to insurance contracts.

9.2.3.N. Any other costs

These are any other costs specifically chargeable to the policyholder under the insurance contract.

In some cases, income tax paid by an entity, even though not paid in a fiduciary capacity, is specifically chargeable to the policyholder under the terms of the contract. Such a tax, which can be described as a "policyholder tax", arises for example, when an entity pays income tax on assets that are underlying items to insurance contracts, and charges the policyholder for its share of that income tax.

The IASB has clarified through the amendments to IFRS 17 in June 2020, that the other costs include income tax payments and receipts that are specifically

²⁴⁵ IFRS 17.BC283I.

chargeable to the policyholder under the terms of an insurance contract (see 9.2.4 below). The consequence of this is that:

- An entity will continue to apply IAS 12 to those income tax payments to measure the amounts of such income tax payments to be included in the fulfilment cash flows
- An entity will recognise insurance revenue for the consideration paid by the policyholder for these tax payments and receipts consistent with the recognition of insurance revenue for other incurred expenses. The IASB staff's view is that for income tax payments specifically chargeable to the policyholder under the contract terms, when the tax expense is incurred applying IAS 12, the entity will treat it as an incurred expense applying IFRS 17²⁴⁶ (see also 15.2.1 below).

How we see it

- The basis for recognition of expenses under IFRS 17 is when the expenses have been incurred following the provision of the insurance contract services. Where the insurance service expenses relate to costs allocated from other standards, in practice, the recognition as insurance service expense will often follow the recognition under the other standards (e.g., the IAS 16 depreciation pattern). When releasing the liability for remaining coverage for the expected insurance service expense and recognising the actual insurance service expenses in profit or loss, the liability for incurred claims is recognised under IFRS 17 for the actual expenses. See section 15.2.1 for a discussion on the interaction between IFRS 17 and other IFRSs.
- IFRS 17 paragraph B121, as amended in June 2020, distinguishes between paragraph (a)(i) 'insurance service expenses' and (a)(ia) income tax. The amendment to specifically mention income tax was needed as income tax cannot be presented as insurance services expenses as, under IAS 1, income tax needs to be presented separately in profit or loss. Therefore, incurred income tax expenses should be presented in the income tax expense line item on the face of the statement of profit or loss and not within the insurance service expenses.

²⁴⁶ IASB Staff paper "Other topics raised by respondents to the Exposure Draft Amendments to IFRS 17" - Agenda ref 2F paragraph 15 - February 2020.

9.2.4. Cash flows excluded from the contract boundary

Having provided a list of cash flows that are within the boundary of an insurance contract, IFRS 17 then provides a list of cash flows that should not be included when estimating the cash flows that will arise as an entity fulfils an existing insurance contract. These are as follows:²⁴⁷

- Investment returns. Investments are recognised, measured and presented separately
- Cash flows (payments or receipts) that arise under reinsurance contracts held. Reinsurance contracts held are recognised, measured and presented separately
- Cash flows that may arise from future insurance contracts, i.e. cash flows outside the boundary of existing contracts (see 9.2.3 above)
- Cash flows relating to costs that cannot be directly attributed to the portfolio of insurance contracts that contain the contract, such as some product development and training costs. Such costs are recognised in profit or loss when incurred
- Cash flows that arise from abnormal amounts of wasted labour or other resources that are used to fulfil the contract. Such costs are recognised in profit or loss when incurred
- Income tax payments and receipts the insurer does not pay or receive in a fiduciary capacity or that are not specifically chargeable to the policyholder under the terms of the contract (see 9.2.3.N above)
- Cash flows between different components of the reporting entity, such as policyholder funds and shareholder funds, if those cash flows do not change the amount that will be paid to the policyholders
- Cash flows arising from components separated from the insurance contract and accounted for using other applicable IFRSs (see 5 to 5.3 above)

IFRS 17, as amended in June 2020, resolves an inconsistency between the description of cash flows within the boundary of an insurance contract (see 9.2.3.N above) and the description of cash flows outside the boundary of an insurance contract. The Board amended IFRS 17 to clarify that income tax payments or receipts not specifically chargeable to the policyholder under the terms of the contract should be excluded from the estimate of the cash flows that will arise as the entity fulfils an insurance contract.²⁴⁸

 ²⁴⁷ IFRS 17.B66.
 ²⁴⁸ IFRS 17.BC170A.

How we see it

Investment returns are not part of the fulfilment cash flows of a contract because measurement of the contract should not depend on the assets that the entity holds. However, where a contract includes participation features, the measurement of the fulfilment cash flows should include the effect of returns from underlying items in those cash flows. The *"Illustrative Examples"* that accompany IFRS 17 explain that asset management is part of the activities the entity must undertake to fulfil the contract when there is an account balance calculated using returns from specified assets and fees charged by the entity (see illustration 5 in section 3.3). In our view, an entity should incorporate asset management expenses in a way that is consistent with how it considers the returns from the assets it is holding in the estimates of fulfilment cash flows, based on the product features. As such, if investment returns from underlying items are included in fulfilment cash flows, then the asset management expenses that relate to those returns should also be included.

Discount rates will need to reflect the characteristics of the insurance contracts. Types of insurance contracts vary significantly, so there will be no single discount rate (curve) that will fit the characteristics of all insurance liabilities.

9.3. Discount rates

The second element of measuring fulfilment cash flows under the general model (discussed at 8 above) is an adjustment (i.e., a discount) to the estimates of future cash flows to reflect the time value of money and financial risks related to those cash flows (to the extent that they are not included in the cash flow estimates). The adjustment is made by discounting estimated future cash flows. Discount rates must:²⁴⁹

- Reflect the time value of money, characteristics of the cash flows and liquidity characteristics of the insurance contract
- Be consistent with observable current market prices (if any) for financial instruments with cash flows whose characteristics are consistent with those of the insurance contracts (e.g., timing, currency and liquidity)
- Exclude the effect of factors that influence such observable market prices, but do not affect the future cash flows of the insurance contracts

The discount rates calculated according to the requirements above should be determined, as follows: $^{\rm 250}$

Insurance liability measurement component	Discount rate for liability
Fulfilment cash flows	Current rate at reporting date
Contractual service margin interest accretion for contracts without direct participation features (including insurance and reinsurance contracts issued and reinsurance contracts held)	Rate at date of initial recognition of group

²⁴⁹ IFRS 17.36.

²⁵⁰ IFRS 17.B72-B73.

Insurance liability measurement component	Discount rate for liability
Changes in the fulfilment cash flows for contracts without direct participation features which relate to future service that affect the contractual service margin (including insurance and reinsurance contracts issued and reinsurance contracts held).	Rate at date of initial recognition of group
Liability for remaining coverage under the premium allocation approach for groups of insurance contracts with a significant financing component.	Rate at date of initial recognition of group
Insurance finance income or expenses	Discount rate used for disaggregation between profit or loss and other comprehensive income
Insurance finance income or expenses for which disaggregation between profit or loss and other comprehensive income is optional and for which changes in financial risk do not have a substantial effect on amounts paid to policyholders (see 15.3.1 below)	Rate at date of initial recognition of group
Insurance finance income or expenses for which disaggregation between profit or loss and other comprehensive income is optional, and for which changes in financial risk assumptions have a significant effect on amounts paid to policyholders (see 15.3.1 below)	Rate that allocates the remaining revised finance income or expense over the duration of the group at a constant rate ('effective yield approach') or, for contracts that use a crediting rate, uses an allocation based on the amounts credited in the period and expected to be credited in future periods ('projected crediting approach').
Insurance finance income or expenses for which disaggregation between profit or loss and other comprehensive income is optional for incurred claims of groups of contracts applying the premium allocation approach (see 15.3.3 below).	Rate at date of incurred claim
Insurance finance income or expenses for which disaggregation between profit or loss and other comprehensive income is optional for groups of insurance contracts with direct participation features for which the entity holds the underlying items (see 15.3.4 below).	Amount that eliminates accounting mismatches with income or expenses on the underlying items, i.e., the net of the two should be nil ('current period book yield approach').

IFRS 17 does not specify requirements for accretion of interest on assets for insurance acquisition cash flows. The Board decided against specifying such

requirements because doing so would be inconsistent with IFRS 15.²⁵¹ Consequently, entities have an accounting policy choice as to whether to accrete interest on such assets and the rate to use for such accretion.

For insurance contracts without direct participation features, the Board concluded that changes in the effects of the time value of money and financial risk do not affect the amount of unearned profit. This is the case even if the payments to policyholders vary with returns on underlying items through a participation mechanism. Accordingly, the entity does not adjust the contractual service margin to reflect the effects of changes in these assumptions and hence a locked-in discount rate is used.²⁵²

Discount rates should reflect the rate at initial recognition of the group, considering that contracts may be added to the group after its initial recognition. This can be achieved by applying locked in rates that correspond to the initial recognition date over the period that the contracts in the group are issued, or a weighted-average locked-in rate that reflects these rates which apply over the period that contracts in the group are issued, which cannot exceed one year.²⁵³ As explained at 7 above, this can result in a change in the discount rates during the period of the contracts as newly recognised contracts are added to the group. When contracts are added to a group in a subsequent reporting period (because the period of the group spans across two reporting periods) and weighted-average discount rates are revised, an entity should apply the revised discount rates from the start of the reporting period in which the new contracts are added to the group.²⁵⁴ This means that there is no retrospective catch-up adjustment for previous reporting periods (see 15.4 below).

Frequently asked questions

Question 9-10: How to account for the difference that may arise between the current discount rate of each contract when it joins the group and the weighted average discount rates used at initial recognition? [TRG meeting April 2019 – Agenda paper no. 02, Log S93]

The IASB staff observed that entities which apply the other comprehensive income disaggregation option use the discount rates determined at the date of initial recognition of a group of insurance contracts to determine the amounts recognised in profit or loss using a systematic allocation. An entity is permitted to use weighted-average discount rates over the period that contracts in a group are issued to determine the discount rate at the date of initial recognition of a group of contracts. The weighted average discount rate used should achieve the outcome that the amounts recognised in other comprehensive income over the duration of the group of contracts total zero.

²⁵¹ IFRS 17.BC184H.

²⁵² IFRS 17.BC228.

²⁵³ IFRS 17.B73.

²⁵⁴ IFRS 17.28.

Frequently asked questions (cont'd)

Question 9-11: Should an entity should use an effective yield rate or a yield curve, specifically, in terms of paragraph B72(e)(i) of IFRS 17 for a group of insurance contracts for which changes in assumptions that relate to financial risk do not have a substantial effect on the amounts paid to policyholders? [TRG meeting May 2018 – Agenda paper no. 07, Log S29]

IFRS 17 does not state whether the discount rate should be a yield curve or a single discount rate. The IASB staff confirmed that, in applying the discount rate determined at the date of initial recognition to nominal cash flows that do not vary based on returns from underlying items, IFRS 17 does not mandate the use of an effective yield rate or a yield curve. In response to the IASB staff, a few TRG members commented that using an effective yield rate compared to using a yield curve could result in a significant difference to insurance finance income or expense to be included in profit or loss over the reporting periods subsequent to initial recognition.

How we see it

- As mentioned above, there is no retrospective catch-up adjustment from the weighted-average locked-in discount rates for previous reporting periods. As discussed in 15.4 below, the frequency of an entity's reporting period and the accounting policy choice available under paragraph B137, would determine what is the 'previous reporting period' in this respect. When an entity chooses a Period-To-Date (PTD) approach, the previous reporting period would be the interim reporting period, so no catch-ups are applied regarding any previous interim or annual reporting period. Conversely, if an entity chooses a Year-To-Date (YTD) approach, the previous reporting period would be determined by reference to the annual reporting period. Both approaches would however, ultimately result in the same weighted-average locked-in discount rate.
- IFRS 17 requires that the discount rates applied reflect the characteristics of the liability. One such relevant characteristic is timing and duration of the cash flows, which would be particularly prominent for long-term liabilities. Typically, the characteristics of timing and duration may be reflected through the use of a yield curve. Possible practical considerations of this might be:
 - Whether a different method could be applied to some types of (cash flows of) participating contracts
 - Whether an entity could use an approach to convert a curve into a single rate as a practical simplification for some types of products. However, this requires careful consideration as an entity would still have to substantiate in every reporting period, whether the IFRS 17 discount rate principles are satisfied. As such, there will be a number of challenges to such an approach.
 - Whether to use a flat rate for short-term liabilities as for such liabilities, the impact of the timing may not be significant. However, it would be a practical expedient that requires a definition of 'short' for these purposes. In addition, materiality aspects may have to be considered.

9.3.1. Discount rates consistent with characteristics of cash flows

Estimates of discount rates must be consistent with other estimates used to measure insurance contracts to avoid double counting or omissions; for example:²⁵⁵

- Cash flows that do not vary based on the returns on any underlying items must be discounted at rates that do not reflect any such variability
- Cash flows that vary based on the returns on any financial underlying items should be:
 - Discounted using rates that reflect that variability; or
 - Adjusted for the effect of that variability and discounted at a rate that reflects the adjustment made
- Nominal cash flows (i.e., those that include the effect of inflation) should be discounted at rates that include the effect of inflation
- Real cash flows (i.e., those that exclude the effect of inflation) must be discounted at rates that exclude the effect of inflation

However, discount rates should not reflect the non-performance (i.e., own credit) risk of the entity.²⁵⁶ The requirement for discount rates to be consistent with the characteristics of the cash flows of insurance contracts is from the perspective of the entity. IFRS 17 requires an entity to disregard its own credit risk when measuring the fulfilment cash flows.²⁵⁷

Cash flows that vary based on the returns on underlying items should be discounted using rates that reflect that variability, or to be adjusted for the effect of that variability and discounted at a rate that reflects the adjustment made. 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.²⁵⁸

Cash flows that vary with returns on underlying items with variable returns, but that are subject to a guarantee of a minimum return, do not vary solely based on the returns on the underlying items, even when the guaranteed amount is lower than the expected return on the underlying items. Hence, an entity should adjust the rate that reflects the variability of the returns on the underlying items for the effect of the guarantee, even when the guaranteed amount is lower than the expected return on the underlying items.

IFRS 17 does not require an entity to divide estimated cash flows into those that vary based on the returns on underlying items and those that do not. If an entity does not divide the estimated cash flows in this way, the entity should apply discount rates appropriate for the estimated cash flows as a whole; e.g., using stochastic modelling techniques or risk-neutral measurement techniques.²⁶⁰

²⁵⁵ IFRS 17.B74.

²⁵⁶ IFRS 17.31.

²⁵⁷ IFRS 17.31, IFRS 17.BC197.

²⁵⁸ IFRS 17.B75.

²⁵⁹ IFRS 17.B76.

²⁶⁰ IFRS 17.B77.

For cash flows of insurance contracts that do not vary based on the returns on underlying items, the discount rate reflects the yield curve in the appropriate currency for instruments that expose the holder to no or negligible credit risk, adjusted to reflect the liquidity characteristics of the group of insurance contracts. That adjustment should reflect the difference between the liquidity characteristics of the group of insurance contracts and the liquidity characteristics of the assets used to determine the yield curve. Yield curves reflect assets traded in active markets that the holder can typically sell readily at any time without incurring significant costs. In contrast, under some insurance contracts the entity cannot be forced to make payments earlier than the occurrence of insured events, or dates specified in the contracts.²⁶¹

Frequently asked question

Question 9-12: Should the liability for any minimum interest rate guarantees made to policyholders be measured through adjusting the discount rate (rather than through adjustments to the cash flows)? [TRG meeting May 2018 – Agenda paper no. 07, Log S38]

The IASB staff stated that although IFRS 17 requires the time value of a guarantee to be reflected in the measurement of fulfilment cash flows, it does not require the use of a specific approach to achieve this objective. Financial risk is included in the estimates of future cash flows or in the discount rate used to adjust the cash flows. Judgement is required to determine the technique for measuring market variables and the technique must result in the measurement of any options and guarantees being consistent with observable market prices. Any consideration beyond this is actuarial (i.e., operational measurement implementation) in nature. The TRG members did not disagree with the IASB staff's observations.

How we see it

- IFRS 17 does not require an entity to divide estimated cash flows into those that vary based on the returns on underlying items and those that do not. By not dividing the cash flows, an entity avoids the complexity of having to disentangle cash flows that may be interrelated. However, if an entity does not divide the estimated cash flows in this way, it should apply discount rates for the estimated cash flows as a whole in a way that is consistent with the principles of the standard; for example, using stochastic modelling or risk-neutral measurement techniques. Both approaches, dividing or not dividing cash flows, have their own conceptual and practical implications, so entities should carefully assess what methods will be most suited to their particular circumstances.
- Entities should be aware that, even for participating contracts, at least some of the cash flows to policyholders are independent of returns on underlying items; for example, payments for fixed death benefit or expenses of the entity that do not vary with the underlying items.

²⁶¹ IFRS 17.B79

9.3.2. Current discount rates consistent with observable market prices

Discount rates should include only relevant factors, i.e., factors that arise from the time value of money, the characteristics of the cash flows and the liquidity characteristics of the insurance contracts. Such discount rates may not be directly observable in the market. Hence, when observable market rates for an instrument with the same characteristics are not available, or observable market rates for similar instruments are available but do not separately identify the factors that distinguish the instrument from the insurance contracts, an entity should estimate the appropriate rates. IFRS 17 does not require a particular estimation technique for determining discount rates. In applying an estimation technique, an entity should:²⁶²

- Maximise the use of observable inputs and reflect all reasonable and supportable information on non-market variables available without undue cost or effort, both external and internal. In particular, the discount rates used should not contradict any available and relevant market data, and any non-market variables used should not contradict observable market variables;
- Reflect current market conditions from the perspective of a market participant
- Exercise judgement to assess the degree of similarity between the features of the insurance contracts being measured and the features of the instrument for which observable market prices are available and adjust those prices to reflect the differences between them

How we see it

 It is unlikely that there will be an observable market price for a financial instrument with the same characteristics as an insurance contract in terms of the timing and nature of the estimated cash flows. An entity will need to exercise judgement to assess the degree of similarity between the features of the insurance contracts measured and those of the instruments for which observable market prices are available and adjust those prices to reflect the differences.

9.3.3. 'Bottom-up' or 'top-down' approach

IFRS 17 proposes two basic methods for determining discount rates for cash flows of insurance contracts that do not vary based on the returns on underlying items, as follows:

A 'bottom-up' approach

The 'bottom-up' approach determines discount rates by adjusting a liquid riskfree yield curve to reflect the differences between the liquidity characteristics of

²⁶² IFRS 17.B78.

the financial instruments that underlie the rates observed in the market and the liquidity characteristics of the insurance contracts.²⁶³

A 'top-down' approach

The 'top-down' approach determines the appropriate discount rates for insurance contracts based on a yield curve that reflects the current market rates of return implicit in a fair value measurement of a reference portfolio of assets. An entity should adjust that yield curve to eliminate any factors that are not relevant to the insurance contracts, but is not required to adjust the yield curve for differences in liquidity characteristics of the insurance contracts and the reference portfolio.²⁶⁴

In theory, when considering all required adjustments, both the 'top-down' and 'bottom-up' approaches should give the same result although in practice this is not necessarily the case.

An example of the approaches giving the same result is illustrated below, where the overall liability discount rate is 2.5% in each case. The example assumes that there are no differences between the liquidity characteristics of the liability and the reference portfolio of assets. The 'top down' approach starts with a current asset yielding 4% and this rate is reduced by 1.5% for expected and unexpected losses while the 'bottom up' approach starts with a risk-free rate of 2% which is increased by a liquidity premium of 0.5%.



Assume a current asset yield of a reference instrument of 4% composed of :

In estimating the yield curve on a 'top down' basis, an entity should use measurement bases consistent with IFRS 13, as follows: 265

- If there are observable market prices in active markets for assets in the reference portfolio, an entity should use those prices
- If a market is not active, an entity should adjust observable market prices for similar assets to make them comparable to market prices for the assets being measured

²⁶³ IFRS 17.B80.

²⁶⁴ IFRS 17.B81.

²⁶⁵ IFRS 17.B82.

- If there is no market for assets in the reference portfolio, an entity should apply an estimation technique. For such assets an entity should:
 - Develop unobservable inputs using the best information available in the circumstances. Such inputs might include the entity's own data and, in the context of IFRS 17, the entity might place more weight on long-term estimates than on short-term fluctuations
 - Adjust the data to reflect all information about market participant assumptions that is reasonably available

In adjusting the yield curve, an entity should adjust market rates observed in recent transactions in instruments with similar characteristics for movements in market factors since the transaction date, and should adjust observed market rates to reflect the degree of dissimilarity between the instrument being measured and the instrument for which transaction prices are observable. For cash flows of insurance contracts that do not vary based on the returns on the assets in the reference portfolio, such adjustments include:²⁶⁶

- Adjusting for differences between the amount, timing and uncertainty of the cash flows of the assets in the portfolio and the amount, timing and uncertainty of the cash flows of the insurance contracts
- Excluding market risk premiums for credit risk, which are relevant only to the assets included in the reference portfolio

In principle, for cash flows of insurance contracts that do not vary based on the returns of the assets in the reference portfolio, there should be a single illiquid risk-free yield curve that eliminates all uncertainty about the amount and timing of cash flows. However, in practice, the top-down approach and the bottom-up approach may result in different yield curves, even in the same currency. This is because of the inherent limitations in estimating the adjustments made under each approach, and the possible lack of an adjustment for different liquidity characteristics in the top-down approach. An entity is not required to reconcile the discount rate determined under its chosen approach with the discount rate that would have been determined under the other approach.²⁶⁷

No restrictions are specified on the reference portfolio of assets used in the topdown approach. However, fewer adjustments would be required to eliminate factors that are not relevant to the insurance contracts when the reference portfolio of assets has similar characteristics. For example, if the cash flows from the insurance contracts do not vary based on the returns on underlying items, fewer adjustments would be required if an entity used debt instruments as a starting point rather than equity instruments. For debt instruments, the objective would be to eliminate from the total bond yield the effect of credit risk and other factors that are not relevant to the insurance contracts. One way to estimate the effect of credit risk is to use the market price of a credit derivative as a reference point.²⁶⁸

Some insurance contracts will have a contract boundary which extends beyond the period for which observable market data is available. In these situations, the entity will have to determine an extrapolation of the discount rate yield curve

²⁶⁶ IFRS 17.B83.

²⁶⁷ IFRS 17.B84.

²⁶⁸ IFRS 17.B85.

beyond that period. IFRS 17 provides no specific guidance on the estimation techniques for interest rates in these circumstances. The general guidance above for unobservable inputs is that an entity should use the best information available in the circumstances and adjust that data to reflect all information about market participant assumptions that is reasonably available.

When the Board considered feedback from entities implementing IFRS 17 as part of the June 2020 amendments, it also considered feedback from users of financial statements that the principle-based requirements for determining discount rates could limit comparability between entities. The Board made no amendments to IFRS 17 in response to that feedback. In the Board's view, requiring an entity to determine discount rates using a rules-based approach would result in outcomes that are appropriate only in some circumstances. IFRS 17 requires entities to apply judgement when determining the inputs most applicable in the circumstances. To enable users of financial statements to understand the discount rates used, and to facilitate comparability between entities, IFRS 17 requires entities to disclose information about the methods used and judgements applied.²⁶⁹

Frequently asked question

Question 9-13: When using a top-down approach to determine discount rates, should the reference portfolio of assets reflect the liquidity characteristics of the insurance contracts? If using an own portfolio of assets as the reference portfolio, should the effect of purchasing and selling assets during the reporting period be reflected in the discount rates used for insurance contracts? [TRG meeting September 2018 – Agenda paper no. 02, Log S65, S72]

The TRG members discussed an IASB staff paper which responded to a submission that asked whether, in applying a top-down approach to determine the discount rates for insurance contracts with cash flows that do not vary based on the returns of underlying items:

- An entity could use the assets it holds as a reference portfolio of assets
- An entity could ignore the liquidity characteristics of insurance contracts
- Changes in the assets the entity holds could result in changes in the discount rates used to measure insurance contracts under specific circumstances.

The TRG members agreed with the IASB staff analysis and conclusion in this paper that an entity can use the assets it holds as a reference portfolio when determining a top-down discount rate to measure its insurance liabilities. The TRG members observed that:

IFRS 17 does not specify restrictions on the reference portfolio of assets used in applying a top-down approach to determine discount rates and also does not define 'a reference portfolio of assets'. Consequently, a portfolio of assets an entity holds can be used as a reference portfolio to determine the discount rates provided that the discount rates achieve the objectives of reflecting the characteristics of the insurance contracts and are consistent with observable current market prices.

²⁶⁹ IFRS 17.BC205A, BC205B.

Frequently asked question (cont'd)

- IFRS 17 requires that discount rates reflect, among other factors, the liquidity characteristics of the insurance contracts. However, when using the top-down approach, as a simplification, IFRS 17 permits an entity not to adjust the yield curve derived from a reference portfolio of assets for differences between the liquidity characteristics of the insurance contracts and those of the reference portfolio. The IASB expected a reference portfolio of assets typically to have liquidity characteristics that more closely match the liquidity characteristics of a group of insurance contracts than would be the case for highly-liquid, high-quality bonds.
- In determining the appropriate discount rates for cash flows that do not vary based on underlying items, an entity ensures that at each reporting date, those discount rates reflect the characteristics of the insurance contracts, even when the entity chooses to use a portfolio of assets that it holds to determine the discount rates.
- An entity needs to make adjustments to the yield curve of the reference portfolio of assets at each reporting date to eliminate any effect on discount rates of credit risk and differences in liquidity characteristics of the insurance contracts and the reference portfolio. However, if the entity uses the simplification and does not make any adjustments to the reference portfolio curve to reflect differences in liquidity characteristics between the reference portfolio and the insurance contracts, then fluctuations in the liquidity of the reference portfolio will be mirrored in changes in discount rates used to measure the group of insurance contracts.
- The TRG members also observed that, when an entity uses the simplification related to liquidity (i.e., the top-down approach discussed above), small changes in discount rates that result from changes in the composition of the reference portfolio could result in significant changes to the insurance contract liabilities measured using those rates, particularly with respect to long-term insurance contracts.

Both the IASB staff and the TRG members note that IFRS 17 contains disclosure requirements for qualitative and quantitative information about the significant judgements and changes in those judgements (see 16.3 below) and consider that, if the effect of illiquidity were to be significant, entities would be expected to disclose such information in their financial statements.

Question 9-14: Would it be appropriate, if applying the top-down discount rate approach, to determine discount rates at initial recognition of each group using a target asset mix that the entity plans to invest in for that group as the reference portfolio of assets, and subsequently, using the actual asset mix covering all underwriting years as the reference portfolio of assets? [TRG meeting April 2019 – Agenda paper no. 02, Log S91]

The IASB staff observed that identifying a reference portfolio that will enable an entity to meet the objectives required for setting a discount rate is dependent on specific facts and circumstances and providing specific application guidance is not within the remit of the TRG.

How we see it

- Some insurance contracts will have a contract boundary which extends beyond the period for which observable market data is available. In these situations, the entity will have to determine an extrapolation of the discount rate yield curve beyond that period. IFRS 17 provides no specific guidance on the estimation techniques for discount rates in these circumstances. The general guidance above for unobservable inputs is that an entity should use the best information available in the circumstances and adjust that data to reflect all information about market participant assumptions that is reasonably available. In these situations, the entity will have to extrapolate the discount rate yield curve beyond the observable period, taking care to consider the reference in IFRS 17 to the fair value methodology prescribed in IFRS 13.
- In the bottom up approach entities will need to determine an appropriate method to adjust the observable market information in a way that reflects the difference in liquidity characteristics of the insurance contracts compared to those of the observable instrument. The liquidity characteristics will depend on the specific nature of a contract. For example, annuities in payment are generally viewed as very illiquid as they cannot be surrendered and only expire on the annuitant's death. Different methods to estimate an illiquidity premium are available. For example, the spread between highly liquid assets and collateralised bonds may give an indication of the difference in liquidity premium would be to estimate it by adjusting the observed spread between a highly liquid instrument and a corporate bond for the credit risk spread implied from the yield on credit default swaps.
- In some jurisdictions, a liquid risk-free yield curve (or interest rate) might be negative. An entity should use the current market rates even if those are negative and this results in the present value of future payments exceeding, rather than being lower than the value of the undiscounted fulfilment cash flows.
- IFRS 17 provides no specific guidance on estimation techniques to extrapolate the discount rate curve. In practice, multiple techniques exist. The general guidance in IFRS 17 indicates that applying an appropriate estimation technique requires judgement, weighing the principle to use the best information available and adjusting for information about market participant assumptions. This will require establishing a robust estimation process for discount rates, including related controls for determining the inputs to discount rates based on the conditions at the reporting date.
- Curves used for regulatory purposes may be a starting point to determine the discount rate curve (or components of that curve) for use under IFRS 17. However, an entity would have to decide if, or to what extent, such an estimate would be consistent with the requirements in IFRS 17 and make any adjustments necessary. In going through this process, entities should be aware of the reference in IFRS 17 to the requirements in IFRS 13 on the consideration of observable market prices and the use of estimation techniques.

9.4. Risk adjustment for non-financial risks

The third element of measuring fulfilment cash flows in the general model (see section 8) is a risk adjustment for non-financial risk.

The risk adjustment for non-financial risk is the compensation that the entity requires for bearing the uncertainty about the amount and timing of cash flows that arise from non-financial risk.²⁷⁰ Non-financial risk is risk arising from insurance contracts other than financial risk, which is included in the estimates of future cash flows or the discount rate used to adjust the cash flows. The risks covered by the risk adjustment for non-financial risk are insurance risk and other non-financial risks such as lapse risk and expense risk.²⁷¹

In theory, the risk adjustment for non-financial risk for insurance contracts measures the compensation that the entity would require to make it indifferent between:²⁷²

 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 as the insurance contracts

In developing the objective of the risk adjustment for non-financial risk, the Board concluded that a risk adjustment for non-financial risk should not represent:²⁷³

- The compensation that a market participant would require for bearing the non-financial risk that is associated with the contract. This is because the measurement model is not intended to measure the current exit value or fair value, which reflects the transfer of the liability to a market participant. Consequently, the risk adjustment for non-financial risk should be determined as the amount of compensation that the entity, not a market participant, would require
- An amount that would provide a high degree of certainty that the entity would be able to fulfil the contract. Although such an amount might be appropriate for some regulatory purposes, it is not compatible with the Board's objective of providing information that will help users of financial statements make decisions about providing resources to the entity

The risk adjustment for non-financial risk reflects the entity's perception of the economic burden of its non-financial risks; it is not a current exit value or fair value, which reflects the transfer to a market participant.²⁷⁴ Therefore, the risk adjustment for non-financial risk reflects the compensation the entity would require for bearing the non-financial risk arising from the uncertain amount

²⁷⁰ IFRS 17.37.

²⁷¹ IFRS 17.B86.

²⁷² IFRS 17.B87.

²⁷³ IFRS 17.BC209.

²⁷⁴ IFRS 17.BC209.

and timing of the cash flows, the risk adjustment for non-financial risk also reflects:²⁷⁵

- The degree of diversification benefit the entity includes when determining the compensation it requires for bearing that risk
- Both favourable and unfavourable outcomes, in a way that reflects the entity's degree of risk aversion

The purpose of the risk adjustment for non-financial risk is to measure the effect of uncertainty in the cash flows that arise from insurance contracts, other than uncertainty arising from financial risk. Consequently, the risk adjustment for non-financial risk should reflect all non-financial risks associated with the insurance contracts. It should not reflect the risks that do not arise from the insurance contracts, such as general operational risk.²⁷⁶

The risk adjustment for non-financial risk should be included in the measurement in an explicit way. The risk adjustment for non-financial risk is conceptually separate from the estimates of future cash flows and the discount rates that adjust those cash flows. The entity should not double-count the risk adjustment for non-financial risk by, for example, also including the risk adjustment for non-financial risk implicitly when determining the estimates of future cash flows or the discount rates. The yield curve (or range of yield curves) used to discount cash flows that do not vary based on the returns on underlying items which are required to be disclosed (see 16.3 below) should not include any implicit adjustments for non-financial risk.²⁷⁷

Frequently asked question

Question 9-15: Does the risk adjustment for non-financial risk take into account uncertainty related to how management will apply discretion? [TRG meeting April 2019 – Agenda paper no. 02, Log S110]

The IASB staff observed that the risk adjustment for non-financial risk does not reflect risks that do not arise from insurance contracts such as general operational risk. Uncertainty related to how management applies discretion for a group of insurance contracts, if not considered a general operational risk, should be captured in the risk adjustment for non-financial risk (e.g. to the extent management discretion reduces the amount it would charge for uncertainty, the discretion would reduce the risk adjustment for nonfinancial risk). The risk adjustment for non-financial risk should reflect favourable and unfavourable outcomes in a way that reflects the entity's degree of risk aversion.

²⁷⁵ IFRS 17.B88.

²⁷⁶ IFRS 17.B89.

²⁷⁷ IFRS 17.B90.

Illustration 34 – Risk adjustment for non-financial risk [IFRS 17.B87]

Compensation an entity requires to be indifferent between fixed and variable outcomes

The risk adjustment for non-financial risk would measure the compensation the entity would require to make it indifferent between fulfilling a liability that, because of non-financial risk, has a 50% probability of being CU90 and a 50% probability of being CU110, and fulfilling a liability that is fixed at CU100. As a result, the risk adjustment for non-financial risk conveys information to users of financial statements about the amount charged by the entity for the uncertainty arising from non-financial risk about the amount and timing of cash flows.

9.4.1. Techniques used to estimate the risk adjustment for non-financial risk

IFRS 17 does not specify the estimation technique(s) used to determine the risk adjustment for non-financial risk. This is because the Board decided that a principle-based approach, rather than identifying specific techniques, would be consistent with its approach on how to determine a similar risk adjustment for non-financial risk in IFRS 13. Furthermore, the Board concluded that limiting the number of risk-adjustment techniques would conflict with its desire to set principles-based IFRSs and, given that the objective of the risk adjustment is to reflect an entity-specific perception of non-financial risk, specifying a level of aggregation that was inconsistent with the entity's view would also conflict with that requirement.²⁷⁸

Therefore, the risk adjustment under IFRS 17 should be determined based on the principle of the compensation that an entity requires for bearing the uncertainty arising from non-financial risk inherent in the cash flows arising from the fulfilment of the group of insurance contracts. According to this principle, the risk adjustment for non-financial risk reflects any diversification benefit the entity considers when determining the amount of compensation that it requires for bearing that uncertainty.²⁷⁹

IFRS 17 states that risk adjustment for non-financial risk should have the following characteristics:²⁸⁰

- Risks with low frequency and high severity will result in higher risk adjustments for non-financial risk than risks with high frequency and low severity
- For similar risks, contracts with a longer duration will result in higher risk adjustments for non-financial risk than contracts with a shorter duration
- Risks with a wider probability distribution will result in higher risk adjustments for non-financial risk than risks with a narrower distribution

²⁷⁸ IFRS 17.BC213.

²⁷⁹ IFRS 17.BC214.

²⁸⁰ IFRS 17.B91.

- The less that is known about the current estimate and its trend, the higher the risk adjustment will be for non-financial risk
- To the extent that emerging experience reduces uncertainty about the amount and timing of cash flows, risk adjustments for non-financial risk will decrease and vice versa

An entity should apply judgement when determining an appropriate estimation technique for the risk adjustment for non-financial risk. When applying that judgement, an entity should also consider whether the technique provides concise and informative disclosure so that users of financial statements can benchmark the entity's performance against the performance of other entities.²⁸¹

It is likely that some entities will want to apply a cost of capital approach technique to estimate the risk adjustment for non-financial risk because this will be the basis of local regulatory capital requirements. It is observed in the Basis for Conclusions that although the usefulness of a confidence level technique diminishes when the probability distribution is not statistically normal, as is often the case for insurance contracts, the cost of capital approach would be more complicated to calculate than a confidence level disclosure. However, the Board expects that many entities will have the information necessary to apply the cost of capital technique.²⁸² This implies that the Board is anticipating that some, or perhaps many, entities will use a cost of capital technique to measure the risk adjustment for non-financial risk.

When the Board considered feedback from entities implementing IFRS 17, it also considered feedback from users of financial statements that the principlesbased requirements for determining the risk adjustment for non-financial risk could limit comparability between entities. The Board made no amendments to IFRS 17 in response to that feedback, for the same reason it made no amendments in response to similar feedback on discount rates (see 9.3 above).²⁸³

Frequently asked question

Question 9-16: Which level is the risk adjustment for non-financial risk required to be determined: in the individual financial statements of entities that are part of a consolidated group (ie parent and subsidiary entities that issue insurance contracts), and in the consolidated financial statements of the group of entities? [TRG meeting May 2018 – Agenda paper no. 02, Log S46]

IFRS 17 does not specify the level within an insurance group at which to determine the risk adjustment for non-financial risk. Therefore, the question arises as to whether, in the individual financial statements of a subsidiary, the risk adjustment for non-financial risk should reflect the degree of risk diversification available to the entity or to the consolidated group as a whole and whether, in the consolidated financial statements of a group of entities, the risk adjustment for non-financial risk issued by entities in the group should reflect the degree of risk diversification

²⁸¹ IFRS 17.B92.

²⁸² IFRS 17.BC217.

²⁸³ IFRS 17.BC214A.

Frequently asked question (cont'd)

available only to the consolidated group as a whole. This issue was discussed by the TRG and the results of the discussion were as follows:

- In respect of individual financial statements, the degree of risk diversification that occurs at a level higher than the issuing entity level is required to be considered if, and only if it is considered when determining the compensation the issuing entity would require for bearing non-financial risk related to the insurance contracts it issues. Equally, risk diversification that occurs at a level higher than the issuing entity level must not be considered when determining the risk adjustment for non-financial risk if it is not considered when determining the compensation the issuing entity would require for bearing non-financial risk related to the insurance contracts it issues.
- In respect of consolidated financial statements, the IASB staff opinion ► is that the risk adjustment for non-financial risk should be the same as the risk adjustment for non-financial risk at the individual entity level because determining the compensation that the entity would require for bearing non-financial risk related to insurance contracts issued by the entity is a single decision that is made by the entity that is party to the contract (i.e., the issuer of the insurance contract). However, differing views were expressed by TRG members. Some TRG members agreed with the IASB staff but other TRG members read the requirements as requiring different measurement of the risk adjustment for non-financial risk for a group of insurance contracts at different reporting levels if the issuing entity would require different compensation for bearing non-financial risk than the consolidated group would require. The TRG members also observed that, in some cases, the compensation an entity requires for bearing non-financial risk could be evidenced by capital allocation in a group of entities.

Subsequently, as part of the June 2020 amendments, the Board considered whether it should clarify its intention in respect of determining the risk adjustment for non-financial risk in the consolidated financial statements of a group of entities in response to those different views. The Board concluded that doing so would address only some differences that could arise in the application of the requirements for determining the risk adjustment for non-financial risk, given the high degree of judgement required to apply those requirements. The Board concluded that practice needs to develop in this area. If necessary, the Board will seek to understand how the requirements are being applied as part of the Post-implementation Review of IFRS 17.²⁸⁴

Question 9-17: In the case of insurance contracts issued by an insurance pool, should the risk adjustment for non-financial risk be determined at the association (pool) level, or at the individual member entity level for members sharing in the results of the pool? Could the risk adjustment for non-financial risk be measured differently in the financial statements of the members when compared to the financial statements of the association (pool)? [TRG meeting September 2018 – Agenda paper no. 09, Log S52]

²⁸⁴ IFRS 17.BC214C.

Frequently asked question (cont'd)

In the fact pattern an association manages two industry pools:

- Pool 1 in which some members are appointed to issue contracts on behalf of all members
- Pool 2 to which members can choose to transfer some insurance contracts they have issued

The IASB staff considered that there should be only one risk adjustment for each insurance contract and that the risk adjustment is either at an individual member level or at an association level, depending on who has issued the contract. Consistent with the discussion in question 9-16 above, some TRG members disagreed with the IASB staff's view that there is one single risk adjustment for a group of insurance contracts that reflects the degree of diversification that the issuer of the contract considers in determining the compensation required for bearing non-financial risk. Those TRG members expressed the view that each entity would consider the compensation it would require for non-financial risk, rather than the compensation required by the association. This would mean that the risk adjustment would not necessarily be determined by the entity that issued the contract (e.g., the pool or individual member of the association that priced the risk). As noted above, the IASB does not propose to amend or clarify IFRS 17 on this matter.

Question 9-18: Should the effect of reinsurance held be considered in calculating the risk adjustment for non-financial risk for contracts that have been reinsured? [TRG meeting April 2019 – Agenda paper no. 02, Log S118]

The IASB staff observed that the risk adjustment for non-financial risk reflects the degree of diversification benefit the entity includes when determining the compensation it requires for bearing that risk. Therefore, if an entity considers reinsurance when determining the compensation it requires for bearing non-financial risk related to underlying insurance contracts, the effect of reinsurance (both cost and benefit) would be reflected in the risk adjustment for non-financial risk of the underlying insurance contracts.

The IASB staff further observed that IFRS 17 requires that the risk adjustment for non-financial risk for reinsurance contracts held represents the amount of risk being transferred by the holder of the group of reinsurance contracts to the issuer of those contracts. Therefore, the risk adjustment for non-financial risk of the reinsurance contract held could not be nil, unless:

- The entity considers reinsurance when determining the compensation it requires for bearing non-financial risk related to underlying insurance contracts
- The cost of acquiring the reinsurance is equal or less than the expected recoveries

The TRG members agreed with the IASB staff observations that if an entity considers reinsurance when determining the compensation it requires for non-financial risk, the effect of the reinsurance would be included in the risk adjustment and that the measurement of the risk adjustment for non-financial risk of a reinsurance contract held is the amount of risk transferred to the reinsurer.

How we see it

- The standard does not prescribe particular techniques for estimating the risk adjustment of a group of contracts. The standard incorporates guidance with the aim to aid entities in selecting an appropriate method.²⁸⁵ Selecting an appropriate technique will be a matter of judgement. In making this judgement, the entity should consider the specific risk characteristics of the group of insurance contracts under consideration.
- Changes in the risk adjustment will reflect several factors, for example: release from risk as time passes, changes in an entity's risk appetite (the amount of compensation it requires for bearing uncertainty), changes in expected variability in future cash flows, and diversification between risks. Entities will need to distinguish between changes in the risk adjustment relating to current and past service (reflected immediately in profit or loss) and those relating to future service (which adjust the contractual service margin- see section 9.5).
- Different entities may determine different risk adjustments for similar groups of insurance contracts because the risk adjustment for nonfinancial risk is an entity specific perception, rather than a market participant's perception, based on the compensation that a particular entity requires for bearing the uncertainty about the amount and timing of the cash flows that arise from the non-financial risks. Accordingly, to allow users of financial statements to understand how entity-specific assessments of risk aversion might differ from entity to entity, disclosure is required of the confidence level used to determine the risk adjustment for non-financial risk or, if a technique other than confidence level is used, the technique used and the confidence level corresponding to the technique (see 16.3 below).
- The risk adjustment reflects diversification benefits the entity considers when determining the amount of compensation it requires for bearing that uncertainty. This approach implies that diversification benefits could reflect effects across groups of contracts, or diversification benefits at an even higher level of aggregation. However, when determining the risk adjustment at a level more aggregated than a group of contracts, an entity must establish an appropriate method for allocating the risk adjustment to the underlying groups. This will form part of the requirements for systems and processes that an entity will need to develop when implementing the standard.
- In addition, since IFRS 17 does not specify the level of aggregation at which to determine the risk adjustment for non-financial risk, the question arises as to whether the risk adjustment for non-financial risk could be negative for a group of insurance contracts. This situation could, in theory, arise where a diversification benefit is allocated between two or more groups of insurance contracts and the additional diversification risk for one group may be negative as the insurer would accept a lower price for taking on these liabilities given that it reduces the risk for the entity in total. IFRS 17 is silent as to whether a risk adjustment could be negative. However, a negative risk adjustment would normally be inappropriate as it would not reflect the purpose of the risk adjustment for non-financial risk which is to measure the effect of uncertainty in the cash flows (see 8.4 above). So, for example, a risk adjustment should not reduce fulfilment cash flows below the best estimate of the expected future cash flows.

²⁸⁵ IFRS 17.BC213-214.

9.4.2. Presentation of the risk adjustment for non-financial risk in the statement of comprehensive income

The change in risk adjustment for non-financial risk is not required to be disaggregated between the insurance service result and the insurance finance income or expense. When an entity decides not to disaggregate the change in risk adjustment for non-financial risk, the entire change should be included as part of the insurance service result.²⁸⁶

When the risk adjustment for non-financial risk is disaggregated between profit or loss and other comprehensive income the method of disaggregation is determined by the disaggregation policy applied to that portfolio (see 15.3.1 below).

²⁸⁶ IFRS 17.81.

The contractual service margin is a new concept, introduced in IFRS 17 to identify the expected profitability of a group of contracts and recognise this profitability over time in an explicit manner.

9.5. Contractual service margin

The fourth element of the building blocks in the general model (see section 8) is the contractual service margin. The contractual service margin is a new concept to IFRS, introduced in IFRS 17 to identify the expected profitability of a group of contracts and recognise this profitability over time in an explicit manner, based on the pattern of services provided under the contract.

The contractual service margin is a component of the asset or liability for the group of insurance contracts that represents the unearned profit the entity will recognise as it provides insurance contract services in the future. Hence, the contractual service margin would usually be calculated at the level of a group of insurance contracts rather than at an individual insurance contract level.

9.5.1. Initial recognition

An entity should measure the contractual service margin on initial recognition of a group of insurance contracts at an amount that, unless the group of contracts is onerous (see section 9.8) or where there is insurance revenue and expenses recognised from the derecognition of an asset for other cash flows (see 15.2.1.A below), results in no income or expenses arising from:²⁸⁷

- Initial recognition of an amount for the fulfillment cash flows (see section 9.2)
- Any cash flows arising from the contracts in the group at that date
- The derecognition at the date of initial recognition of:
- Any asset recognised for insurance acquisition cash flows (see section 7.3); and any other asset or liability previously recognised for cash flows related to the group of contracts.



²⁸⁷ IFRS 17.38.
For insurance contracts acquired in a transfer of insurance contracts or in a business combination with the scope of IFRS 3, an entity must apply the above in accordance with the requirements for acquisitions of insurance contracts.²⁸⁸

Before the recognition of a group of insurance contracts, an entity might be required to recognise an asset or liability for cash flows related to the group of insurance contracts other than insurance acquisition cash flows either because of the occurrence of the cash flows or because of the requirements of another IFRS Standard. Cash flows are related to the group of insurance contracts if those cash flows would have been included in the fulfilment cash flows at the date of initial recognition of the group had they been paid or received after that date. To apply the requirement in the last bullet point above, an entity must derecognise such an asset or liability to the extent that the asset or liability would not be recognised separately from the group of insurance contracts if the cash flow or the application of the IFRS Standard occurred at the date of initial recognition of the group of insurance contracts. ²⁸⁹For example, an entity that recognised a liability for premiums received in advance of the recognition of a group of insurance contracts would derecognise that liability when the entity recognises a group of insurance contracts to the extent the premiums relate to the contracts in the group. The performance obligation that was depicted by the liability would not be recognised separately from the group of insurance contracts had the premium been received on the date of initial recognition of the group. No insurance revenue arises on the derecognition of the liability.

The approach above on initial recognition applies to contracts with and without participation features, including investment contracts with discretionary participation features.

A contractual margin is not specifically identified for contracts subject to the premium allocation approach although the same principle of profit recognition applies (i.e., no day 1 profits and recognition over the coverage period as insurance contract services are provided) (see 10 below).

For groups of reinsurance contracts held, the calculation of the contractual service margin at initial recognition is modified to take into account the fact such groups are usually assets rather than liabilities and that a margin payable to the reinsurer, rather than making profits, is an implicit part of the premium (see Section 11).

For insurance contracts acquired in a business combination or transfer, the contractual service margin at initial recognition is calculated as the difference between the consideration and the fulfilment cash flows (see section 14).

²⁸⁸ IFRS 17.39. ²⁸⁹ IFRS 17.B66A.

How we see it

- As a result of the measurement requirements, the contractual service margin on initial recognition, assuming a contract is not onerous and there is no insurance revenue or expense due to derecognition of another asset, is no more than the balancing number needed to avoid a day 1 profit. The contractual service margin cannot depict unearned losses. Instead, IFRS 17 requires an entity to recognise a loss in profit or loss for onerous groups of contracts (see Section 11).
- Contracts accounted for under IFRS 17 will be the only type of contracts under IFRS that will explicitly disclose the expected remaining profitability. The notion of the contractual service margin is a unique feature of the standard. The way users will evaluate and appreciate the contractual service margin is expected to be a critical aspect of the decisionusefulness of the IFRS 17 accounting model.

9.6. Subsequent measurement

The carrying amount of a group of insurance contracts at the end of each reporting period should be the sum of: $^{\rm 290}$

- The liability for remaining coverage comprising:
 - The fulfilment cash flows related to future service allocated to the group at that date, measured applying the requirements discussed at 9.2 above - see 9.6.1 below
 - The contractual service margin of the group at that date, measured applying the requirements discussed at 9.6.3 below
- The liability for incurred claims, comprising the fulfilment cash flows related to past service allocated to the group at that date, measured applying the requirements discussed at 9.2 above - see 9.6.2 below.

Hence, after initial recognition, the fulfilment cash flows comprise two components:

- Those relating to future service (the liability for remaining coverage)
- Those relating to past service (the liability for incurred claims)

Frequently asked question

Question 9-19: How should the insured event and coverage period be defined for disability insurance contracts? [TRG meeting September 2018 - Agenda paper no. 01, Log S63]

In some circumstances an incurred claim can create insurance risk for an entity that would not exist if no claim was made. Two examples cited of this situation are:

Insurance coverage for disability that provides an annuity for the period when a policyholder is disabled

²⁹⁰ IFRS 17.40.

 Insurance coverage for fire that provides compensation for the cost of rebuilding a house after a fire.

The question, therefore, arises whether the entity's obligation to pay these amounts, that are subject to insurance risk, should be treated as a liability for incurred claims or a liability for remaining coverage. One view is that the liability for incurred claims is the entity's obligation to pay for a policyholder's claim (on becoming disabled or upon a fire occurring). The alternative view is that the liability for incurred claims is the policyholder's obligation to settle a claim that has already been made by a policyholder (for a period of disability or to pay for the cost of the house damaged by fire) and the liability for remaining coverage is the obligation to pay claims relating to future events that have not yet occurred (such as future periods of disability or claims relating to fire events that have not occurred).

The TRG members discussed an IASB staff paper which argued that both approaches represent valid interpretations of IFRS 17 and are a matter of judgement for the entity as to which interpretation provides the most useful information about the service provided to the policyholder.

The TRG members observed that:

- The classification of an obligation as a liability for incurred claims or a liability for remaining coverage does not affect the determination of fulfilment cash flows. However, the classification does affect the determination of the coverage period. Consequently, the classification affects whether some changes in fulfilment cash flows adjust the contractual service margin, as well as the allocation of the contractual service margin
- The definitions in IFRS 17 allow an entity to use judgement when determining whether the obligation to pay an annuity after a disability event and the obligation to pay the costs of rebuilding a house after a fire event are part of the liability for remaining coverage or liability for incurred claims
- It is a matter of judgement for an entity to develop an accounting policy that reflects the insurance service provided by the entity to the policyholder under the contract in accordance with IFRS 17. The requirements of IAS 8 apply and hence the entity should apply an approach consistently for similar transactions and over time
- Whatever approach an entity applies, IFRS 17 requires disclosure of significant judgements made in applying the standard and requires disclosures relating to the contractual service margin, which will enable users to understand the effects of the approach required
- These observations are also relevant when law or regulation impose a requirement for an entity to settle a claim by life-contingent annuity

Although leaving the decision open to the entity allows preparers to determine which approach provides more useful information given the facts and circumstances around their products, the accounting policy choice may result in identical contracts being accounted for differently in the financial statements of different insurers.

9.6.1. The liability for remaining coverage

IFRS 17, as amended in June 2020, states that the liability for remaining coverage is an entity's obligation to: 291

- Investigate and pay valid claims for insured events that have not yet occurred (i.e., the obligation that relates to the unexpired portion of the insurance coverage)
- Pay amounts under existing contracts that are not included above and that relate to:
 - Insurance contract services not yet provided (i.e., the obligations that relate to future provision of insurance contract services)

Or

Any investment components or other amounts that are not related to the provision of insurance contract services and that have not been transferred to the liability for incurred claims

At initial recognition, the liability for remaining coverage includes all remaining cash inflows and outflows under an insurance contract. Subsequently, at each reporting date, the liability for remaining coverage, excluding the contractual service margin, is re-measured using the fulfilment cash flow requirements discussed at 9.2 above. That is, it comprises the present value of the best estimate of the cash flows required to settle the obligation together with an adjustment for non-financial risk. The fulfilment cash flows for the liability for remaining coverage for contracts without direct participation features are discounted at the date of initial recognition of the group (under both the general model and the premium allocation approach where applicable) (see 9.3 above).

An entity should recognise income and expenses for the following changes in the carrying amount of the liability for remaining coverage:²⁹²

- Insurance revenue for the reduction in the liability for remaining coverage because of services provided in the period (see 15.2.1 below for measurement)
- Insurance service expenses for losses on groups of onerous contracts, and reversals of such losses (see 9.8 below)
- Insurance finance income or expenses for the effect of the time value of money and the effect of financial risk (see 15.3 below)

9.6.2. The liability for incurred claims

IFRS 17, as amended in 2020, states that the liability for incurred claims is an entity's obligation to: 293

Investigate and pay valid claims for insured events that have already occurred, including events that have occurred but for which claims have not been reported, and other incurred insurance expenses

²⁹¹ IFRS 17 Appendix A.

²⁹² IFRS 17.41.

²⁹³ IFRS 17 Appendix A.

- Pay amounts that are not included above and that relate to:
 - Insurance contract services that have already been provided
 Or
 - Any investment components or other amounts that are not related to the provision of insurance contract services and that are not in the liability for remaining coverage

At initial recognition of a group of contracts, the liability for incurred claims is usually nil as no insured events covered under the contracts have occurred. Subsequently, at each reporting date, the liability for incurred claims is measured using the fulfilment cash flow requirements discussed at 9.2 and 9.4 above. That is, it comprises the present value of the expected cash flows required to settle the obligation together with an adjustment for non-financial risk. This includes unpaid incurred cash flows allocated to the group of contracts (including expenses) as discussed at 9.2.3 above.

The liability for incurred claims under the general model, including claims arising from contracts with direct participation features, is discounted at a current rate (i.e., the rate applying as at the reporting date). The liability for incurred claims under the premium allocation approach need not be discounted if certain conditions are met (see 10.5 below). Otherwise, the liability for incurred claims under the premium allocation approach is also discounted at a current rate.

There is no direct relationship between the liability for incurred claims and the liability for remaining coverage. That is, the creation of a liability for incurred claims (or a reduction in the value of incurred claims) does not necessarily result in an equal and opposite reduction to the liability for remaining coverage. There is no contractual service margin attributable to the liability for incurred claims as the contractual service margin relates to remaining (i.e., future) service provided over the coverage period and incurred claims relate to past service.

Consequently, the establishment of a liability for incurred claims should give rise to the following accounting entry:

	CU	CU
Dr. Insurance service expense - profit or loss	Х	
Cr. Liability for incurred claims		Х

Subsequent to initial recognition, an entity should recognise income and expenses for the following changes in the carrying amount of the liability for incurred claims:²⁹⁴

 Insurance service expenses - for the increase in the liability because of claims and expenses incurred in the period, excluding any investment components (see 15.2.2 below)

²⁹⁴ IFRS 17.42.

- Insurance service expenses for any subsequent changes in fulfilment cash flows relating to incurred claims and incurred expenses (see 15.2.2 below)
- Insurance finance income or expenses for the effect of the time value of money and the effect of financial risk (see 15.3 below)

Disclosure of the liability for incurred claims is required showing the development of actual claims compared with previous estimates of the liability for incurred claims, except for those claims for which uncertainty about the amount and timing of payments is typically resolved within one year (see 16.5.3 below).

How we see it

- Usually, the fulfilment cash flows should reduce over the contract period as the insurance contract services still to be provided decline. When future insurance contract services can no longer occur, then the fulfilment cash flows of the liability for remaining coverage should be nil.
- An exception to this guideline may occur where premiums for past service remain outstanding at a reporting date. In this case, even though all insurance contract services have been provided, the liability for remaining coverage could still reflect a balance for the premiums receivable.
- IFRS 17 does not distinguish between or require separate disclosure of the components of the liability for incurred claims which represent claims notified to the insurer (sometimes described as 'outstanding claims') and claims incurred but not reported (sometimes described as 'IBNR claims').
 IFRS 17 also does not distinguish between, or require, separate disclosure of those components of the liability for incurred claims that represent the entity's liability for expected payments to the policyholder and those that represent an allocation of expenses.

9.6.3. Subsequent measurement of the contractual service margin (for insurance contracts without direct participation features)

The adjustment of the contractual service margin results in spreading the effects of changes in estimates of future cash flows over time. The contractual service margin at the end of the reporting period represents the profit in the group of insurance contracts that has not yet been recognised in profit or loss because it relates to the future service to be provided under the contracts in the group.²⁹⁵

At the end of each reporting period, the carrying amount of the contractual service margin of a group of insurance contracts without direct participation features comprises the carrying amount at the start of the reporting period adjusted for:²⁹⁶

The effect of any new contracts added to the group (see 7 above);

²⁹⁵ IFRS 17.43.

²⁹⁶ IFRS 17.44.

- interest accreted on the carrying amount of the contractual service margin during the reporting period, measured at the discount rates at initial recognition (see98.3 above)
- The changes in fulfilment cash flows relating to future service (see below), except to the extent that:
 - Such increases in the fulfilment cash flows exceed the carrying amount of the contractual service margin, giving rise to a loss (see 9.8 below)

Or

- Such decreases in the fulfilment cash flows are allocated to the loss component of the liability for remaining coverage (see 9.8 below)
- The effect of any currency exchange differences (see 8.3 above) on the contractual service margin
- The amount recognised as insurance revenue because of the transfer of insurance contract services in the period, determined by the allocation of the contractual service margin remaining at the end of the reporting period (before any allocation) over the current and remaining coverage period (see 9.7 below)



The changes in fulfilment cash flows that relate to future events which adjust the contractual service margin for a group of insurance contracts without direct participation features are, as follows:²⁹⁷

- Experience adjustments arising from premiums received in the period that relate to future service, and related cash flows such as insurance acquisition cash flows and premium-based taxes, measured at the discount rates applying at the date of initial recognition
- Changes in estimates of the present value of the future cash flows in the liability for remaining coverage (except those changes described in paragraph B97, see below) measured at the discount rates applying at the date of initial recognition
- Differences between any investment component expected to become payable or repayable in the period and the actual investment component or loan to a policyholder that becomes payable or repayable in the period

²⁹⁷ IFRS 17.B96.

Those differences are determined by comparing (i) the actual investment component that becomes payable in the period with (ii) the payment in the period that was expected at the start of the period plus an insurance finance income or expense related to that expected payment before it becomes payable

- Differences between any loan to a policyholder expected to become repayable in the period and the actual loan to a policyholder that becomes repayable in the period. Those differences are determined by comparing the actual loan to a policyholder that becomes repayable in a period with the repayment in the period that was expected at the start of the period plus an insurance finance income or expense related to that expected repayment before it becomes repayable
- Changes in the risk adjustment for non-financial risk that relate to future service. An entity is not required to disaggregate the change in the risk adjustment for non-financial risk between a change related to non-financial risk and the effect of the time value of money and changes in the time value of money. If an entity makes such a disaggregation, it should adjust the contractual service margin for the change related to non-financial risk, measured at the discount rates applying at the date of initial recognition

The June 2020 amendments to IFRS 17 made several alterations including:

- Clarifying that the contractual service margin is not adjusted for insurance finance income or expenses related to expected payments on any investment component before it becomes payable
- Clarifying that the contractual service margin is also adjusted for differences between actual and expected payments relating to loans to a policyholder and that any insurance finance income or expense relating to either such policyholder loans or investment components does not affect the contractual service margin
- Addressing the treatment of changes in the risk adjustment for nonfinancial risk in respect of the time value of money and financial risk if they are disaggregated. IFRS 17 allows, but does not require, an entity to disaggregate changes in the risk adjustment for non-financial risk into those caused by the time value of money and those caused by changes in nonfinancial risk (see 9.4.2 above)

In February 2018, the IASB staff responded to a submission made to the TRG asking whether the adjustment of the contractual service margin for a difference in the investment component as a result of the acceleration or delay of repayment was appropriate since the contractual service margin is adjusted for changes solely in timing of payments which appears to conflict with the principle underlying insurance revenue recognition by referring to the Board's reasons for this treatment. The Board did not regard as useful information, for example, the recognition of a gain for a delay in repaying an investment component accompanied by a loss that adjusts the contractual service margin for the expected later repayment. Acceleration or delay in repayments of investment components only gives rise to a gain or loss for the entity to the extent that the amount of the repayment is affected by its timing. As IFRS 17 does not require an entity to determine the amount of an investment

component until a claim is incurred, accordingly, when a claim is incurred, IFRS 17 requires an entity to determine how much of that claim is an investment component, and whether it was expected to become payable in that period. IFRS 17 requires any unexpected repayment of an investment component to adjust the contractual service margin. The contractual service margin will also be adjusted for changes in future estimates of cash flows which will include (but not separately identify) the reduction in future repayments of investment components. This achieves the desired result of the net effect on the contractual service margin being the effect of the change in timing of the repayment of the investment component.²⁹⁸ However, the Board did amend IFRS 17 to specify that the adjustment of the contractual service margin for a difference in the investment component does not apply to insurance finance income or expenses that depict the effect on the investment component of the time value of money and financial risk between the beginning of the period and the unexpected payment or non-payment of the investment component.²⁹⁹

The contractual service margin for contracts without direct participation features should not be adjusted for the following changes in fulfilment cash flows because they do not relate to future service:³⁰⁰

- The effect of the time value of money and changes in the time value of money, and the effect of financial risk and changes in financial risk. These effects comprise:
 - The effect, if any, on estimated future cash flows
 - The effect, if disaggregated, on the risk adjustment for non-financial risk
 - The effect of a change in discount rate
- Changes in estimates of fulfilment cash flows in the liability for incurred claims
- Experience adjustments, except those described above that relate to future service

IFRS 17 notes that some changes in the contractual service margin offset changes in the fulfilment cash flows for the liability for remaining coverage, resulting in no change in the total carrying amount of the liability for remaining coverage. To the extent that changes in the contractual service margin do not offset changes in the fulfilment cash flows for the liability for remaining coverage, an entity should recognise income and expenses for the changes, applying the requirements at 9.6.1 above.³⁰¹

The terms of some insurance contracts without direct participation features give an entity discretion over the cash flows to be paid to policyholders. A change in the discretionary cash flows is regarded as relating to future service, and accordingly adjusts the contractual service margin. To determine how to identify a change in discretionary cash flows, an entity should specify at inception of the contract the basis on which it expects to determine its

²⁹⁸ IFRS 17.BC235.

²⁹⁹ IFRS 17.BC235fn.

³⁰⁰ IFRS 17.B97.

³⁰¹ IFRS 17.46.

commitment under the contract; for example, based on a fixed interest rate, or on returns that vary based on specified asset returns.³⁰²

An entity should use that specification to distinguish between the effect of changes in assumptions that relate to financial risk on that commitment (which do not adjust the contractual service margin) and the effect of discretionary changes to that commitment (which adjust the contractual service margin).³⁰³

If an entity cannot specify at inception of the contract what it regards as its commitment under the contract and what it regards as discretionary, it should regard its commitment to be the return implicit in the estimate of the fulfilment cash flows at inception of the contract, updated to reflect current assumptions that relate to financial risk.³⁰⁴

Frequently asked question

Question 9-20: For insurance contracts without direct participation features, is a difference between the expected and the actual crediting rate applied to a policyholder's account balance included in insurance finance income or expense, or does it adjust the contractual service margin applying paragraph B96(c) of IFRS 17? [TRG meeting September 2018 – Agenda paper no. 11, Log S57]

The IASB staff observed that paragraph 96 of IFRS 17 is applicable for differences between any investment component expected to become payable in the period and the actual investment component that becomes payable in the period. However, in the fact pattern provided, the account balance is not expected to become payable in the period and does not become payable in the period and, therefore, the requirement to adjust the contractual service margin does not apply in that period.

Question 9-21: Do all premium experience adjustments relate to future service and therefore adjust the contractual service margin, or is an entity required to identify whether the experience adjustment relates to current, past, or future service? [TRG meeting September 2018 – Agenda paper no. 11, Log S57]

The submission asked how differences between expected premiums and actual premiums (i.e., premium experience adjustments) which relate to current or past service should be accounted for (i.e., should these adjust the contractual service margin or be recognised in the statement of profit or loss immediately as part of either insurance revenue or insurance service expenses?).

The TRG members agreed with the analysis in the IASB staff paper and observed that:

Applying the general model, experience adjustments arising from premiums received in the period that relate to future services adjust the contractual service margin. Premium adjustments related to current or past service should be recognised immediately in the statement of profit or loss as part of insurance revenue.

³⁰² IFRS 17.B98.

³⁰³ IFRS 17.B99.

³⁰⁴ IFRS 17.B100.

- Although premium experience adjustments are not specifically referenced in paragraph B124 of IFRS 17, the purpose of that paragraph is to demonstrate an alternative analysis of insurance revenue as determined by paragraph B123 of IFRS 17 (see 15.1.1 below). Hence, applying the requirements in IFRS 17 should result in premium experience adjustments relating to current and past service being included in insurance revenue despite the lack of a specific reference in paragraph B124 of IFRS 17.
- For the premium allocation approach, the requirements for allocating premium adjustments above, apply to expected premium receipts, including premium experience adjustments (see 15.1.2 below).

The TRG members also observed that:

- Given that an entity is required to disclose an analysis of insurance revenue recognised in the period, an additional line item may be necessary in the reconciliation to reflect the effect of premium experience adjustments on the revenue recognised in the period (see 16.1.1 below).
- In some circumstances, judgement may be required to determine whether premium experience adjustments relate to future service and therefore adjust the contractual service margin rather than are recognised in the statement of profit or loss.

The June 2020 amendments to IFRS 17 added a specific reference to experience adjustments for premium receipts consistent with the TRG comments. See 15.1.1 below.

How we see it

- The requirement to accrete interest on the contractual service margin at historic rates for groups of contracts without direct participation features creates a data challenge for entities because they need to store and accurately apply a potentially large number of locked-in discount rates. Some would prefer to accrete interest on the contractual service margin at current rates to avoid the need to track historic rates. Accreting the contractual service margin at current rates, however, would create theoretical and practical issues and would not ease the data burden for entities that choose to disaggregate insurance finance expense between profit or loss and other comprehensive income.
- The number of historic discount rates that need to be tracked may be greater for participating contracts without direct participation features. The reason is that the rate applied to adjust the contractual service margin for changes in fulfilment cash flows is more likely to differ from the rate to accrete interest on the contractual service margin as the former should reflect the characteristics of the specific liabilities rather than a risk-free rate.
- Deciding whether a premium experience adjustment relates to future service, or is part of the coverage in current and past periods, is not

always clear and may require judgement. Premiums tend to be due in advance of the related service. However, this would clearly not be the case with, for example, adjustment premiums in reinsurance contracts that are determined towards or after the end of a coverage period. Attributing expected premium receipts that are overdue to past or future coverage might not be obvious in all situations.

9.7. Allocation of the contractual service margin to profit or loss

Determining how to release the contractual service margin to profit or loss is a key aspect of IFRS 17 and one of the key challenges implementing the standard.

The basic principle is that an amount of the contractual service margin for a group of insurance contracts is recognised in profit or loss in each period to reflect the insurance contract services provided under the group of insurance contracts in that period.

The amount recognised in profit or loss is determined by:³⁰⁵

- Identifying the coverage units in the group. The number of coverage units in a group is the quantity of insurance contract services provided by the contracts in the group, determined by considering for each contract the quantity of the benefits provided under a contract and its expected coverage period
- Allocating the contractual service margin at the end of the period (before recognising any amounts in profit or loss to reflect the insurance contract services provided in the period) equally to each coverage unit provided in the current period and expected to be provided in the future; and
- Recognising in profit or loss the amount allocated to coverage units provided in the period

It is observed in the Basis for Conclusions that the Board views the contractual service margin as depicting the unearned profit for coverage and other services provided over the coverage period. Insurance coverage is the defining service provided by insurance contracts and an entity provides this service over the whole of the coverage period, and not just when it incurs a claim. Consequently, the contractual service margin should be recognised over the coverage period in a pattern that reflects the provision of coverage as required by the contract. To achieve this, the contractual service margin for a group of insurance contracts remaining (before any allocation) at the end of the reporting period is allocated over the coverage provided in the current period and expected remaining future coverage, on the basis of coverage units, reflecting the expected duration and quantity of benefits provided by contracts in the group. The Board considered whether:³⁰⁶

The contractual service margin should be allocated based on the pattern of expected cash flows or on the change in the risk adjustment for non-

³⁰⁵ IFRS 17.B119. ³⁰⁶ IFRS 17.BC279.

financial risk caused by the release of risk. However, the Board decided the pattern of expected cash flows and the release of the risk adjustment for non-financial risk are not relevant factors in determining the satisfaction of the performance obligation of the entity. They are already included in the measurement of the fulfilment cash flows and do not need to be considered in the allocation of the contractual service margin. Hence, the Board concluded that coverage units better reflect the provision of insurance coverage; and

The contractual service margin should be allocated before any adjustments made because of changes in fulfilment cash flows that relate to future service. However, the Board concluded that allocating the amount of the contractual service margin adjusted for the most up-to-date assumptions provides the most relevant information about the profit earned from service provided in the period and the profit to be earned in the future from future service.

The Board also considered whether the allocation of the contractual service margin based on coverage units would result in profit being recognised too early for insurance contracts with fees determined based on the returns on underlying items. For such contracts, IFRS 17 requires the contractual service margin to be determined based on the total expected fee over the duration of the contracts, including expectations of an increase in the fee because of an increase in underlying items arising from investment returns and additional policyholder contributions over time. The Board rejected the view that the allocation based on coverage units results in premature profit recognition. The Board noted that the investment component of such contracts is accounted for as part of the insurance contract only when the cash flows from the investment component and from insurance and other services are highly interrelated and hence cannot be accounted for as distinct components. In such circumstances, the entity provides multiple services in return for an expected fee based on the expected duration of contracts, and the Board concluded the entity should recognise that fee over the coverage period as the insurance services are provided, not when the returns on the underlying items occur.³⁰⁷

IFRS 17 requires the contractual service margin remaining at the end of the reporting period to be allocated equally to the coverage units provided in the period and the expected remaining coverage units. IFRS 17 does not specify whether an entity should consider the time value of money in determining that equal allocation and consequently does not specify whether that equal allocation should reflect the timing of the expected provision of the coverage units. The Board concluded that should be a matter of judgement by an entity.³⁰⁸

Consistent with the requirements in IFRS 15, the settlement of a liability is not considered to be a service provided by the entity. Thus, the recognition period for the contractual service margin is the coverage period over which the entity provides the coverage promised in the insurance contract, rather than the period over which the liability is expected to be settled. The risk margin the entity recognises for bearing risk is recognised in profit or loss as the entity is

³⁰⁷ IFRS 17.BC280.

released from risk in both the coverage period and the settlement period. For contracts with a coverage period of one year, this means that the contractual service margin will be released over that one year period (possibly, a single reporting period).³⁰⁹ For longer-term contracts, with a coverage period lasting many years, an entity will have to use judgement in order to determine an appropriate allocation of the contractual service margin to each reporting period.

Frequently asked questions

Question 9-22: How to allocate the contractual service margin to coverage units provided in the current period and expected to be provided in the future applying paragraph B119(b) of IFRS 17. [TRG meeting February 2018 – Agenda paper no. 07, Log S09]

The IASB staff observed that the contractual service margin is allocated equally to each coverage unit provided in the current period and expected to be provided in the future. Therefore, the allocation is performed at the end of the period, identifying coverage units that were actually provided in the current period and coverage units that are expected at this date to be provided in the future.

Question 9-23: What is the definition of "quantity of benefits" in paragraph B119(a) of IFRS 17 for use in determining the amortisation pattern of the contractual service margin? [TRG meeting February 2018 and May 2018 – Agenda papers no. 05, Log S01]

In May 2018, the TRG analysed an IASB staff paper that contained the IASB staff's views on sixteen examples of different types of insurance contracts. The TRG members observed that:

- IFRS 17 established an objective for CSM coverage units which was to reflect the services provided in a period under a group of insurance contracts. However, it does not establish detailed requirements, and it would not be possible to develop detailed requirements that would apply appropriately to the wide variety of insurance products existing globally.
- The determination of coverage units is not an accounting policy choice, but involves judgement and estimates to best achieve the principle of reflecting the services provided in each period. Those judgements and estimates should be applied systematically and rationally.
- The analysis of the examples in the IASB Staff paper depends on the fact patterns in that paper, and would not necessarily apply to other fact patterns. The method that best reflects the services provided in each period would be a matter of judgement based on facts and circumstances.
- In considering how to achieve the principle, the TRG members observed:
 - The period in which an entity bears insurance risk is not necessarily the same as the insurance coverage period

³⁰⁹ IFRS 17.BC283.

►	Expectations of lapses of contracts are included in the determination
	of coverage units because they affect the expected duration of
	the coverage. Consistently, coverage units reflect the likelihood of
	insured events occurring to the extent that they affect the expected
	duration of coverage for contracts in the group

- Because the objective is to reflect the insurance services provided in each period, different levels of service across periods should be reflected in the determination of coverage units
- Determining the quantity of benefits provided under a contract requires an entity to consider the benefits expected to be received by the policyholder, not the costs of providing those benefits expected to be incurred by the entity
- A policyholder benefits from the entity standing ready to meet valid claims, not just from making a claim if an insured event occurs. The quantity of benefits provided therefore relates to the amounts that can be claimed by the policyholder
- Different probabilities of an insured event occurring in different periods do not affect the benefit provided in those periods of the entity standing ready to meet valid claims for that insured event. Different probabilities of different *types* of insured events occurring might affect the benefit provided by the entity standing ready to meet valid claims for the different types of insured events.
- IFRS 17 does not specify a particular method or methods to determine the quantity of benefits. Different methods may achieve the objective of reflecting the services provided in each period, depending on facts and circumstances.

The TRG members considered that the following methods might achieve the objective if they are reasonable proxies for the services provided under the groups of insurance contracts in each period:

- A straight-line allocation over the passage of time, but reflecting the number of contracts in a group
- A method based on the maximum contractual cover in each period
- A method based on the amount the entity expects the policyholder to be able to validly claim in each period if an insured event occurs
- Methods based on premiums. However, premiums will not be reasonable proxies when comparing services across periods if they are receivable in different periods to those in which insurance services are provided, or if they reflect different probabilities of claims for the same type of insured event in different periods rather than different levels of service of standing ready to meet claims. Additionally, premiums will not be reasonable proxies when comparing contracts in a group if they reflect different levels of profitability in contracts. The level of profitability in a contract does not affect the services provided by the contract
- Methods based on expected cash flows. However, methods that result in no allocation of the contractual service margin to periods in which the entity is standing ready to meet valid claims do not meet the objective

The below examples apply the principles above to specific fact patterns for insurance contracts issued without direct participation features. Examples for reinsurance contracts issued and insurance contracts with direct participation features are discussed at 9.9.4 and 12.3.4 below respectively.

Illustration 35 – Credit life loan insurance

A life insurance policy pays a death benefit equal to the principal and interest outstanding on a loan at the time of death. The balance of the loan will decline because of contractually scheduled payments and cannot be increased.

Applying the principles above the method suggested for determining the quantity of benefits is the cover for the contractual balance outstanding because it is both the maximum contractual cover and the amount the entity expects the policyholder to be able to make a valid claim for if the insured event occurs.

Illustration 36 - Credit life product with variable amount of cover

A credit life insurance policy where the amount payable on an insured event varies (for example, claims might relate to an outstanding credit card balance). In these cases, the sum assured will vary over time, rather than simply reducing. In addition, the sum assured may be limited based on the lender's credit limits.

Applying the principles above, the methods suggested for determining the quantity of benefits are either the constant cover of the contractual maximum amount of the credit limit or cover based on the expected credit card balances (i.e. the amount the entity expects the policyholder to be able to make a valid claim for if the insured event occurs).

Illustration 37 – Mortgage loss cover

An insurance contract provides cover for five years for default losses on a mortgage, after recovering the value of the property on which the mortgage is secured. The balance of the mortgage will decline because of contractually scheduled payments and cannot be increased.

Applying the principles above, the methods suggested for determining the quantity of benefits are either the maximum contractual cover (the contractual balance of mortgage) or the amount the entity expects the policyholder to be able to make a valid claim for if the insured event occurs (the contractual balance of the mortgage less the expected value of the property).

Illustration 38 – Product warranty

A five-year warranty coverage insurance contract provides for replacement of a purchased item if it fails to work properly within five years of the date of purchase. Claims are typically skewed toward the end of the coverage period as the purchased item ages.

Applying the principles above, the quantity of benefits is constant over the five year coverage period if the price of replacement product is expected to remain constant. However, if the cost of the replacement product rises over the coverage period (e.g., inflation costs) then the coverage units should include expectations about the cost of replacing the item.

Illustration 39 – Extended product warranty

Extended warranty policies cover the policyholders after the manufacturer's original warranty has expired. The policies provide new for old cover in the event of a major defect to the covered asset.

Applying the principles above, the expected coverage duration does not start until the manufacturer's original warranty has expired. The policyholder cannot make a valid claim to the entity until then.

Illustration 40 – Health cover

An insurance contract provides health cover for 10 years for specified types of medical costs up to ≤ 1 m over the life of the contract, with the expected amount and expected number of claims increasing with age.

Applying the principles above, the expected coverage duration is the 10 year period during which cover is provided, adjusted for any expectations of the limit being reached during the ten years and lapses. For determining the quantity of benefits the following two methods are suggested:

Comparing the contractual maximum amount that could have been claimed in the period with the remaining contractual maximum amount that can be claimed as a constant amount for each future coverage period. So, if a claim of €100,000 were made in the first year, at the end of the year the entity would compare €1m coverage provided in the year with coverage of €900,000 for the following nine years, resulting in an allocation of 1/9.1 of the contractual service margin for the first year

Or

Comparing the maximum amount that could be claimed in the period with the expected maximum amounts that could be claimed in each of the future coverage periods, reflecting the expected reduction in cover because of claims made. This approach involves looking at the probabilities of claims in different periods to determine the expected maximum amounts in future periods. However, in this fact pattern, the probability of claims in one period affects the amount of cover for future periods, thereby affecting the level of service provided in those periods.

Illustration 41 – Transaction liability

A transaction liability policy will pay claims for financial losses arising as a result of breaches of representations and warranties made in a specified and executed acquisition transaction. The policy period (contract term) is for 10 years from the policy start date. The insurer will pay claims for financial losses reported during the 10-year policy period up to the maximum sum insured.

Applying the principles above the insured event is the discovery of breaches of representations and warranties (consistent with the definition of title insurance - see 3.7 above). Coverage starts at the moment the contract is signed and lasts for 10 years. The IASB staff rejected the view that the coverage period is just one day (i.e., the transaction closing date, which is the date on which the representations and warranties were made).

Illustration 42 – Combination of different types of cover

This example assumes there are five different contracts (A-E) in a single group of insurance contracts. Each contract has a different combination of four coverages (accidental death, cancer diagnosis, surgery and inpatient treatment). Each contract has a different coverage period. Coverages have a high level of interdependency in the same insurance contract; if a coverage of an insurance contract in the group of insurance contracts lapses, other coverages of the same insurance contract lapse simultaneously. Presented in the table below is the summary of the contracts:

Contract	Coverage				Coverage
	Accidental death	Cancer diagnosis	Surgery	Inpatient treatment	period
А	Cover of 2000	Cover of 1000	Cover of 500	Cover of 50	2 years
В	N/A	Cover of 1000	Cover of 500	N/A	5 years
с	N/A	N/A	Cover of 500	Cover of 50	2 years
D	N/A	N/A	Cover of 500	Cover of 50	5 years
E	Cover of 2000	N/A	N/A	N/A	10 years

Illustration 42 – Combination of different types of cover (cont'd)

The entity charges the same annual premium amount for each type of cover, and the total annual premium amount for a contract is the sum of the premiums for each type of cover included in the contract.

Applying the principles above the expected coverage duration is the period in which cover is provided, adjusted for expectations of lapses. The quantity of benefits for each contract is the sum of all the levels of cover provided. So, based on the cover set out in the table, the total coverage units for contract A for each year would be CU3,550 (i.e. 2,000 + 1,000 + 500 + 50) and for contract B 1,500 (i.e. 1,000 + 500). Methods which do not reflect the different amounts of cover provided by each contract would not appear to be valid. A method based on annual premiums may be valid depending on the factors mentioned in the TRG analysis above.

In this example, in all scenarios the coverage period is the same for all coverage components so the probability of the insured event does not affect the coverage period and can be ignored. If the coverage period for the various covers is different, then the probability of the insured event becomes relevant as some coverage components will expire before other coverage components.

Illustration 43 – Life contingent annuity

A life contingent pay out annuity pays a fixed monthly amount of ≤ 10 each period until the annuitant dies.

Applying the principles above the expected coverage duration is the probability weighted average expected duration of the contract. The expected coverage duration is reassessed in each period. The quantity of benefits is the fixed monthly amount of ≤ 10 . An approach that does not reassess the expected coverage period would appear to be inconsistent with the current measurement principle of IFRS 17.

The IASB staff rejected the view that there is a constant level of benefits provided over the life of the annuitant and that the contractual service margin should be amortised straight line over the remaining expected life of the annuitant (i.e. the quantity of benefits is €10 per year and the coverage period is the length of time until there will no longer be any payments made to the policyholder which is estimated at 40 years) because it does not reflect the expected duration of the contract. The IASB staff also rejected the view that the contract is a series of individual promises to pay a fixed amount at a future point in time if the annuitant is still alive at that point in time because it requires an entity to split a contract into multiple individual contracts and also does not appear to require reassessment of the expected coverage duration.

Illustration 44 – Forward purchase of fixed rate annuity

A forward contract to buy an annuity in the future at a fixed rate. The premium is payable when the annuity is bought. If the policyholder dies, or cancels the contract, before the date the annuity can be purchased, the policyholder receives no benefit.

Applying the principles above the entity bears insurance risk from the date the forward contract is issued, but the coverage period does not start until the date the annuity starts (as a claim cannot be made before that date). The insured event is that the policyholder lives long enough (i.e. survives) to receive payments under the annuity.

How we see it

- The standard is silent on whether an entity should allocate the contractual service margin to profit or loss using coverage units that reflect the time value of money. In our view, both methods (i.e., considering time value of money and not considering it) are acceptable, but an entity must apply the method consistently as an accounting policy choice.
- Following the TRG discussion referred to above, we expect practitioners will have to apply judgement based on the specific product characteristics in determining the quantity of benefits underlying coverage units in a way that best depicts the provision of insurance contract services over the coverage period of the group of contracts.

9.7.1. Allocating the contractual service margin on the basis of coverage units determined by considering both insurance coverage and any investment return service

IFRS 17, as amended in June 2020, defines insurance contract services as the following services that an entity provides to the policyholder of an insurance contract:³¹⁰

- Coverage for an insured event (insurance coverage);
- For insurance contracts without direct participation features, the generation of an investment return for the policyholder, if applicable (investment-return service); and
- For insurance contracts with direct participation features, the management of underlying items on behalf of the policyholder (investment-related service).

As the contractual service margin is recognised in profit or loss to reflect the provision of insurance contract services, this means that the period over which the contractual service margin is amortised includes both the period in which the entity provides insurance contract services and the period over which it provides an investment-return service (for insurance contracts without direct participation features) or an investment-related service (for insurance contracts

³¹⁰ IFRS 17 Appendix A.

with direct participation features). The coverage period of insurance contracts with direct participation features is discussed at 12.3.4 below.

In IFRS 17, as issued in 2017, the coverage period of an insurance contract without direct participation features included only the period in which an entity provided insurance contract services and did not include the period in which an entity provided investment return-services. In May 2018, most TRG members disagreed that insurance contracts under the general model should be treated as providing only insurance services. Stakeholders also expressed concerns that contracts which provide insurance coverage that ends significantly before the investment-return service ended would result in 'front-end' revenue recognition and deferred annuity contracts with an account balance accumulating in the period before the annuity payments start could result in 'back-end' revenue recognition if insurance coverage is provided only during the annuity periods. As a result, the Board was persuaded that some insurance contracts outside the scope of the variable fee approach (i.e., those that do not contain direct participation features) provide an investment-return service and that recognising the contractual service margin considering both insurance coverage and an investment-return service will provide useful information to users of the financial statements.³¹¹

Insurance contracts without direct participation features may provide an investment-return service if, and only if:³¹²

- An investment component exists or the policyholder has a right to withdraw an amount
- The entity expects the investment component, or amount the policyholder has a right to withdraw, to include an investment return (an investment return could be below zero, for example in a negative interest rate environment)
- The entity expects to perform investment activity to generate that investment return

In this context, a 'right to withdraw an amount from the entity' includes a policyholder's right to:³¹³

Receive a surrender value or refund of premiums on cancellation of a policy

Or

Transfer an amount to another insurance provider

The Board admits that specifying conditions for an investment-return service creates the risk that an appropriate outcome may not be achieved in all scenarios (for example, entities might also conclude that an investment-return service exists in circumstances in which the Board would conclude otherwise such as when an entity provides only custodial services relating to an investment component). Balancing those potential risks, the Board decided to specify conditions that are necessary to identify, but not determinative of, the existence of an investment-return service. An entity is required to apply

³¹¹ IFRS 17.BC283B.

³¹² IFRS 17.B119B.

³¹³ IFRS 17.BC283C.

judgement, considering the facts and circumstances, to determine whether an insurance contract meets the conditions to provide an investment-return service.³¹⁴

For the purpose of amortising the contractual service margin, the period of investment-return service ends at or before the date that all amounts due to current policyholders relating to those services have been paid, without considering payments to future policyholders included in the fulfilment cash flows as a result of mutualisation (see 12.1 below).³¹⁵

Illustration 45 – Forward purchase of fixed rate annuity

An insurance contract matures in year 10 and pays the customer the account value at maturity. The contract also includes a death benefit that varies depending on which year in the 10-year period the death occurs. Specifically, if the customer dies in years 1-5, the customer's beneficiary would receive a death benefit that is the higher of 110% of the premium paid or the accumulated account value (assume that the death benefit for years 1-5 results in significant insurance risk). However, if the customer dies in years 6-10 the customer's beneficiary receives only the account value. There is no surrender penalty.

Does the insurer only have to consider years 1-5 for determining the coverage units to determine the amortisation of the contractual service margin? Or does the insurer need to consider all 10 years for determining coverage units and amortisation of the contractual service margin?

Based on IFRS 17, as amended in June 2020, the coverage units should be determined reflecting the benefits to the policyholder during the period of both the insurance coverage and the investment return services (i.e., 10 years). Under IFRS 17 as issued in 2017, the insurer would only consider years 1 5 for determining the coverage units since that is the period of the insurance benefits.



³¹⁴ IFRS 17.BC283D-E.

³¹⁵ IFRS 17.B119A.

Illustration 46 – Deferred annuity contract without an investment component which provides an investment-return service

A deferred annuity contract is a contract under which premiums are paid upfront. The premiums earn a return during the accumulation phase and the accumulated amount can be converted into an annuity at a fixed conversion rate at a future date. The accumulation phase could be a substantial number of years. During the accumulation phase the policyholder has the right to transfer the accumulated amount to another annuity provider or to receive the accumulated amount if (s)he dies. After conversion into an annuity, there is no period of guaranteed payments, i.e., if the policyholder dies after conversion, but before the first annuity payment the policyholder receives nothing. Hence, the contract does not have an investment component. However, although there is no investment component, the policyholder has the right during the accumulation phase to withdraw an amount from the entity that includes an investment return. (An investment-return service only exists if the contract includes an investment component or if the policyholder has a right to withdraw an amount from the entity.) The onerous contract test is performed at the level of the IFRS 17 group (as described in section 4). Under existing IFRS 4 reporting, entities apply liability adequacy tests at an aggregation level determined by previously grandfathered accounting policies. IFRS 17 is likely to require a more granular assessment.

9.8. Onerous contracts

An insurance contract is onerous at the date of initial recognition if the fulfilment cash flows allocated to the contract, including any previously recognised insurance acquisition cash flows and any cash flows arising from the contract at the date of initial recognition in total are a net outflow.



As discussed at 8 above, a loss must be recognised on initial recognition of a group of insurance contracts if that group is onerous. As discussed at 6.2 above, an entity should group such contracts in a portfolio separately from contracts that are not onerous.

When a group of insurance contracts are onerous, an entity should recognise a loss component and book the corresponding loss in profit or loss for the net outflow for the group of onerous contracts, resulting in the carrying amount of the liability for remaining coverage of the group being equal to the fulfilment cash flows and the contractual service margin of the group being zero.³¹⁶

Subsequent to initial recognition, a group of insurance contracts becomes onerous (or more onerous) if the following amounts exceed the carrying amount of the contractual service margin: 317

- Unfavourable changes relating to future service in the fulfilment cash flows allocated to the group arising from changes in estimates of future cash flows and the risk adjustment for non-financial risk
- For a group of insurance contracts with direct participation features, the decrease in the amount of the entity's share of the fair value of the underlying items

An entity should recognise a loss in profit or loss to the extent of that excess.

For losses under onerous groups of insurance contracts recognised either on initial recognition or subsequently, an entity should establish (or increase) a loss component of the liability for remaining coverage for an onerous group depicting the losses recognised. A 'loss component' means a notional record of the losses attributable to each group of onerous insurance contracts. The liability for the expected loss is contained within the liability for remaining

³¹⁶ IFRS 17.47.

³¹⁷ IFRS 17.48.

coverage for the onerous group (as it is within the fulfilment cash flows). Keeping a record of the loss component of the liability for remaining coverage is necessary in order to account for subsequent reversals, if any, of the onerous group and any loss component is required to be separately disclosed (see 16.1.1 below). The loss component determines the amounts that are presented in profit or loss as reversals of losses on onerous groups and are consequently excluded from the determination of insurance revenue and, instead, credited to insurance service expenses.³¹⁸

After an entity has recognised a loss on an onerous group of insurance contracts, it should allocate:³¹⁹

- The subsequent changes in fulfillment cash flows of the liability for remaining coverage on a systematic basis between:
 - The loss component of the liability for remaining coverage
 - > The liability for remaining coverage, excluding the loss component
- Solely to the loss component until that component is reduced to zero:
 - Any subsequent decrease relating to future service in fulfillment cash flows allocated to the group arising from changes in estimates of future cash flows and the risk adjustment for non-financial risk
 - Any subsequent increases in the amount of the entity's share of the fair value of the underlying items

IFRS 17 does not specify the order in which an entity allocates the fulfilment cash flows in the bullet points above (i.e., whether paragraph 50(a) or 50(b) is applied first).³²⁰

An entity should adjust the contractual service margin only for the excess of the decrease over the amount allocated to the loss component.

The subsequent changes in the fulfilment cash flows of the liability for remaining coverage to be allocated are:³²¹

- Estimates of the present value of future cash flows for claims and expenses released from the liability for remaining coverage because of incurred insurance service expenses
- Changes in the risk adjustment for non-financial risk recognised in profit or loss because of the release from risk
- Insurance finance income or expenses

The systematic allocation required above should result in the total amounts allocated to the loss component being equal to zero by the end of the coverage period of a group of contracts (since the loss component will have been realised in the form of incurred claims).³²²

³¹⁸ IFRS 17.49.

³¹⁹ IFRS 17.50.

³²⁰ IFRS 17.IE95(c).

³²¹ IFRS 17.51.

³²² IFRS 17.52

IFRS 17 does not prescribe specific methods to track the loss component. The IASB considered whether to require specific methods but concluded that any such methods would be inherently arbitrary. The IASB, therefore, decided to require an entity to make a systematic allocation of changes in the fulfilment cash flows for the liability for remaining coverage that could be regarded as affecting either the loss component or the rest of the liability.³²³

Changes in the liability for remaining coverage due to insurance finance income or expenses, release from risk, and incurred claims and other insurance service expenses, need to be allocated between the loss component and the remainder of the liability for remaining coverage on a systematic basis. An entity could allocate the effect of these changes to the loss component in proportion to the total liability, although other bases could be appropriate. Whichever approach is adopted, it should be applied consistently. This also implies that insurance finance income or expenses must be allocated to the loss component to reflect the accretion of interest.

Changes in the liability for incurred claims are not allocated to the liability for remaining coverage.

Illustration 47 – Application of the loss component for a group of onerous contracts

An entity determines that a group of insurance contracts without direct participation features is onerous at initial recognition. On initial recognition, the fulfilment cash flows (disregarding discounting and other adjustments) are a net cash outflow of CU50. Therefore, this is recognised as a loss in profit or loss. There is no contractual service margin. The loss component of the liability for remaining coverage is CU50.

At the entity's next reporting date, it calculates that the fulfilment cash flows for the liability for remaining coverage have decreased by CU60. Applying paragraph 50 of IFRS 17, the entity decides that it will first allocate the subsequent changes in fulfilment cash flows of the liability for remaining coverage in a systematic way between the loss component and the liability for remaining coverage excluding the loss component. The entity then decides to allocate any subsequent decrease relating to future service in the fulfilment cash flows solely to the loss component. As a result, CU40 adjusts the loss component of the liability for remaining coverage by a release (i.e., a credit) to profit or loss. The remaining CU20 reduction does not adjust the loss component of the liability for remaining coverage. Consequently, at the reporting date, the loss component of the liability for remaining coverage is CU10 (i.e., CU50 less CU40).

³²³ IFRS 17.BC287.

How we see it

- Tracking the loss component of the liability for remaining coverage for each group of onerous contracts will be a new and complex task, particularly for many life insurers. Most non-life insurers will be familiar with the concept of running off provisions for unearned premiums and unexpired risks, and we expect that tracking a loss component should be easier for short duration contracts. Maintaining the loss component is not equivalent to maintaining a negative contractual service margin because the purpose of the loss component is to separately account for and present the shortfall in the insurance liability and, in contrast to the contractual service margin, is not directly driven by the performance of services under the group of contracts.
- The standard clearly implies that insurance finance income or expenses should be allocated to the loss component to reflect the accretion of interest. Even though the total liability for remaining coverage is measured using current rate, the standard is not explicit on what discount rate - a current rate or a rate locked-in at inception - should be used for allocating insurance finance income or expenses to the loss component. An entity should therefore make an accounting policy choice on this matter that is applied consistently for contracts accounted for under the general model.
- When the entity applies a current rate for allocating insurance finance income or expenses to the loss component, it should also determine an accounting policy on whether it records the remeasurement of the loss component in profit or loss at the current rate, or whether it disaggregates this effect between insurance service result and insurance finance income or expense using the locked-in rate determined at inception. It should apply this accounting policy consistently to contracts accounted for under the general model, see 15.2.1.A below.
- Note that for contracts with direct participation features, the loss component should be determined at the current rate, consistent with the measurement model, with the resulting effects included in insurance service result, see 12.3.3 and 15.3 below.

9.9. Reinsurance contracts issued

A reinsurance contract is a contract issued by one entity (the reinsurer) to compensate another entity for claims arising from one or more insurance contracts issued by that other entity (underlying contracts).³²⁴

The requirements for recognition and measurement of reinsurance contracts issued are the same as for insurance contracts. This means that the issuer should make an estimate of the fulfilment cash flows including estimates of expected future cash flows. At initial recognition (and at each reporting date) this will include estimates of future cash flows arising from underlying insurance contracts expected to be issued by the reinsured entity (and covered by the issued reinsurance contract) that are within the contract boundary of the

³²⁴ IFRS 17 Appendix A.

reinsurance contract. This is because the issuer of the reinsurance contract has a substantive obligation to provide insurance cover (i.e. services) for those unissued policies. However, the unit of account for measurement is the reinsurance contract rather than the underlying individual direct contracts.

9.9.1. The contract boundary of a reinsurance contract issued

The terms and conditions of reinsurance contracts create specific application questions as to the contract boundary. This section discusses the application to reinsurance contracts issued; for the general principles see 9.1 above. For the matters that relate more specifically to reinsurance contracts held, see 11.2 below.

Frequently asked questions

Question 9-24: What is the contract boundary of a reinsurance contract that contains a break clause? [TRG meeting February 2018 – Agenda paper no. 02, Log S22]

Some reinsurance contracts issued may contain break clauses which allow either party to cancel the contract at any time following a specified notice period. TRG members observed that, in an example of a reinsurance contract where the reinsurer can terminate coverage at any time with a three-month notice period, the initial contract boundary for the issuer of the reinsurance contract would exclude cash flows related to underlying insurance premiums outside of that three-month notice period.

Question 9-25: From the perspective of the cedant, is there is an expectation of a symmetrical treatment of the contract boundary between the reinsurer and the cedant for the examples discussed at the May 2018 meeting for reinsurance held? [TRG meeting September 2018 - Agenda paper no. 11, Log S75]

This example is similar to the example discussed at the May 2018 TRG meeting. See Questions 13-3 and 13-4 below. The May 2018 example was from the perspective of the cedant. The September 2018 example is from the perspective of the reinsurer. The contract boundary is the same from each perspective because:

- When the cedant has a right to receive services, the reinsurer has an obligation to provide services
- When the cedant has an obligation to pay premiums, the reinsurer has a right to compel premiums

The submission to the IASB staff in September 2018 included an additional fact pattern in which there is (or there is not) a unilateral right for the reinsurer to amend the rate of the ceding commission it pays, in addition to unilateral termination rights. The IASB staff observed that in this fact pattern, the existence of the right to terminate the contract with a three month notice period determines the cash flows within the contract boundary regardless of the existence of a right to amend the rate of the ceding commission if the contract is not terminated. Therefore, the same accounting would apply to the additional fact pattern provided.

9.9.2. Issued adverse loss development covers

For reinsurance contracts which cover events that have already occurred, but for which the financial effect is uncertain, IFRS 17 states that the insured event is the determination of the ultimate costs of the claim.³²⁵

Frequently asked questions

Question 9-26: How should insurance revenue and insurance service expenses be presented for insurance contracts acquired in conjunction with a business combination or similar acquisition in their settlement period. More specifically, whether revenue would reflect the entire expected claims or not? [TRG meeting February 2018 - Agenda paper no. 07, Log S04]

The IASB staff stated that for insurance contracts that cover events that have already occurred but the financial effect of which is uncertain, the claims are incurred when the financial effect is certain. This is not when an entity has a reliable estimate if there is still uncertainty involved. Conversely this is not necessarily when the claims are paid if certainty has been achieved prior to settlement. Accordingly, insurance revenue would reflect the entire expected claims as the liability for remaining coverage reduces because of services provided. If some cash flows meet the definition of an investment component, those cash flows will not be reflected in insurance revenue or insurance service expenses.

This results in entities accounting differently for similar contracts, depending on whether those contracts are issued originally by the entity or whether the entity acquired those contracts in their settlement period. Assuming a long settlement period, the potential consequences of this distinction include:

- An entity applies the general model for contracts acquired in their settlement period because the period over which claims would develop is much longer than one year, whilst entities expect to apply the premium allocation approach for similar contracts that they issue
- An entity recognises revenue for the contracts acquired in their settlement period over the period the claims are expected to develop, while revenue is no longer recognised over this period for similar contracts issued

The TRG members observed that, although the requirements in IFRS 17 are clear, applying the requirements reflects a significant change from existing practice and this change results in implementation complexities and costs.

In May 2018, the IASB staff prepared an outreach report which included implementation concerns regarding the subsequent treatment of insurance contracts issued and acquired in their settlement period. Subsequently, the IASB decided not to change IFRS 17 for this issue, but has amended IFRS 17 to provide transitional relief for these contracts when the modified

³²⁵ IFRS 17.B5.

retrospective approach (see 17.4.2 below) or the fair value approach (see 17.5 below) is applied.

This issue is not specific to reinsurance contracts issued, it is also relevant to direct adverse development covers issued.

How we see it

Some reinsurance contracts issued (as well as direct insurance contracts issued) may contain a mixture of both retrospective and prospective coverage. In these circumstances an entity would need to apply judgement as to: (i) the portfolio of contracts to which a contract with such a mixture should be allocated; and (ii) whether the 'mixed' contract could be split into separate retrospective and prospective components, with each component allocated to different portfolios, applying the guidance discussed at 6.1.1. above.

9.9.3. Accounting for ceding commissions and reinstatement premiums

Reinsurance contracts include common types of commissions due from a reinsurer to a cedant. These include both:

- Commissions that are not contingent on claims
- Commissions that are contingent on claims

Questions have arisen how these commissions should be accounted for in the financial statements of the reinsurer.

Frequently asked questions

Question 9-27: How should ceding commissions paid by the reinsurer to the cedant be treated in the reinsurer's statement of financial performance? The submission considers whether the treatment is different for fixed commissions and commissions that are not fixed [TRG meeting September 2018 – Agenda paper no. 03, Log S55]

The submission asked how the following should be accounted for in the financial statements of the reinsurer:

- Common types of commission due to the cedant
- Reinstatement premiums charged to the cedant in order to continue coverage following the occurrence of an insured event.

The TRG members discussed the analysis in an IASB staff paper and observed that:

- The requirements in paragraph 86 of IFRS 17 for the presentation of income and expenses from reinsurance contracts held are based on the economic effects of exchanges between the reinsurer and the cedant and it would be appropriate to apply an assessment of the economic effect of such exchanges to reinsurance contracts issued as well.
- The economic effect of amounts exchanged between a reinsurer and a cedant that are not contingent on claims is equivalent to the effect of charging a different premium. Therefore, these amounts would be recognised as part of insurance revenue.
- The economic effect of amounts exchanged between a reinsurer and a cedant that are contingent on claims is equivalent to reimbursing a different amount of claims than expected. Therefore, these amounts would be recognised as part of insurance service expenses.
- Unless a cedant provides a distinct service to the reinsurer that results in a cost to the reinsurer for selling, underwriting and starting a group of reinsurance contracts that it issues, a ceding commission is not an insurance acquisition cash flow of the insurer. The IASB staff observed that, unlike insurance acquisition costs that are paid to a third-party intermediary, ceding commissions are paid by the reinsurer to the cedant who is the policyholder of the contract.
- Amounts exchanged between the reinsurer and the cedant that are not contingent on claims may meet the definition of an investment component if they are repaid to the cedant in all circumstances. However, an amount deducted from the initial premium up-front is not an investment component (although the impact on insurance revenue is the same).

The TRG members observed that applying the requirements in IFRS 17 for amounts exchanged between a reinsurer and a cedant has practical implications because the requirements are different from existing practice. The TRG members also observed that applying the requirements of IFRS 17 may affect key performance measures currently used to assess the performance of reinsurers.

- Applying the guidance above in practice to the reinsurer:
 - A ceding commission charged as a fixed amount or as a percentage of premiums on the underlying insurance contracts is a reduction in insurance revenue. If paid after the premium is received, the ceding commission may meet the definition of an investment component, provided the amounts are repaid to the policyholder in all circumstances.
 - A ceding commission contingent on claims (i.e., excluding any minimum amounts that are, in effect, non-contingent) is part of claims and recognised as part of insurance service expenses.
 - A mandatory reinstatement premium contingent on a claim amount and settled net with the claims paid to the cedant is equivalent to reimbursing a different amount of claims to the cedant and should be recognised as part of insurance service expenses when incurred.

A voluntary reinstatement premium which is not contingent on claims (i.e. the cedant can decide not to pay the additional premium and the contract terminates) is equivalent to the effect of charging a higher premium to extend the contract coverage to an additional period, or higher level of exposure, and is recognised as insurance revenue. The IASB staff observed that when the reinsurer has no right to exit or reprice the contract (the reinstatement premium is at predetermined rates), the expected cash flows related to the reinstatement premium

are within the boundary of the initial reinsurance contract and voluntary reinstatement premiums cannot be considered cash flows related to a future contract.

The following flow chart may assist in the assessment of how to account for exchanges between a reinsurer and a cedant.



How we see it

During the TRG discussions, the IASB staff observed that the requirements for the presentation of income or expenses from reinsurance contracts held are based on the economic effect of exchanges between the reinsurer and the cedant. Therefore, the assessment of the economic effect of such exchanges included in the illustration above would apply to both reinsurance contracts issued and reinsurance contracts held.

9.9.4. Determining the quantity of benefits for identifying coverage units

As discussed at 9.7.1 above, the question of how to determine the quantity of benefits for coverage units was discussed by the TRG in both February 2018 and May 2018. In May 2018, the TRG analysed an IASB staff paper that contained the IASB staff's views on sixteen examples of different types of insurance contracts.

The following examples apply the principles discussed at 8.7.1 above to specific fact patterns for reinsurance contracts issued.

Illustration 48 – Proportional reinsurance issued

A reinsurance contract issued provides proportional cover for underlying contracts issued during the contract period. The reinsurance contract issued is for a period of one year. Underlying contracts are written uniformly throughout the year and are annual policies that are reasonably homogenous and provide relatively even cover over their one-year coverage periods.

Applying the principles at 9.7.1 above the expected coverage duration of the reinsurance contract issued is two years. This is because the reinsurer has a substantive obligation to provide services under the contract for a period of two years as the risks attaching over a single policy year will cover two years of exposure to risk. A valid method for determining the quantity of benefits (over which to amortise the CSM) is the amount for which the policyholder has the ability to make a valid claim. This is because the pattern of coverage should reflect the expected pattern of underwriting of the underlying contracts because the level of service provided depends on the number of underlying contracts in-force. Therefore, the more contracts in force, the higher the level of service.

Illustration 49 – Reinsurance adverse development of claims with claim limit

A reinsurance adverse development cover contract will pay claims in excess of a stated aggregate amount on a group of underlying property and casualty contracts where the claim event has already occurred. There is a total aggregate limit to the amount payable under the contract. Because there is uncertainty in the ultimate amount and timing of the final settlements of the underlying claims, the insured event is the determination of the ultimate cost of settling those claims.

Applying the principles at 9.7.1 above the expected coverage duration would be the period from inception of the contract to the time at which the limit of cover is expected to be reached, adjusted for expected lapses, if any. Valid methods for determining the quantity of benefits (for amortising the CSM) are:

- Comparing the contractual maximum amount that could have been claimed in the period with the remaining contractual maximum amount that can be claimed as a constant amount for each future coverage period Or
- Comparing the expected amount of underlying claims covered in the period with the expected amount of underlying claims remaining to be covered in future periods.

Illustration 49 – Reinsurance adverse development of claims with claim limit (cont'd)

A straight-line method over the expected coverage duration might not be valid because it would not reflect the different levels of cover provided across periods.

Illustration 50 – Reinsurance adverse development of claims without claim limit

A reinsurance adverse development cover contract will pay claims in excess of a stated aggregate amount on a group of underlying property and casualty contracts where the claim event has already occurred. There is no total aggregate limit to the amount payable under the contract. Because there is uncertainty in the ultimate amount and timing of the final settlements of the underlying claims, the insured event is the determination of the ultimate cost of settling those claims.

Applying the principles at 9.7.1 above the expected coverage duration would be the period to when the financial effect of the claims becomes certain. This may be before the claims are paid if certainty has been achieved prior to the actual payment. An entity will need to estimate the expected duration of the period in which claims will be made and payments will be made to estimate the fulfilment cash flows. Valid methods for determining the quantity of benefits are:

- Equal benefits in each coverage period, which would end at the date of the last expected settlement payment
 - Or
- Compare the expected amount of underlying claims covered in the period with the expected amount of underlying claims remaining to be covered in future periods

Or

If the underlying claims were of equal size, comparing the number of underlying claims covered in the period with the number of underlying claims remaining to be covered in future periods

9.10. Impairment of assets recognised for insurance acquisition cash flows

As discussed at 7.3 above, an entity should recognise as an asset insurance acquisition cash flows paid (or insurance acquisition cash flows for which a liability has been recognised under another IFRS Standard) before the related group of insurance contracts is recognised.

As a result, IFRS 17 requires, an entity to assess the recoverability of any insurance acquisition cash flow asset recognised before the related group of insurance contracts is recognised at the end of each reporting period, if facts and circumstances indicate the asset may be impaired. If an entity identifies an impairment loss, the entity should adjust the carrying amount of the asset

and recognise any impairment loss identified in profit and loss. If an impairment loss is reversed, an entity shall adjust the carrying amount of the asset and recognise the reversal of any such loss in profit and loss.³²⁶

In assessing the recoverability:³²⁷

- An entity must recognise that impairment loss in profit or loss and reduce the carrying amount of an asset for insurance acquisition cash flows so that the carrying amount of each asset does not exceed the expected net fulfilment cash inflows (see 9.2 above) for the related group of insurance contracts;
- When an entity allocates insurance acquisition cash flows to groups of insurance contracts that will include insurance contracts that are expected to arise from renewals of the insurance contracts in that group, the entity must recognise an impairment loss in profit or loss and reduce the carrying amount of the related assets for insurance acquisition cash flows to the extent that:
 - The entity expects those insurance acquisition cash flows to exceed the net fulfilment cash inflows for the expected renewals
 - The excess determined in the preceding bullet point has not already been recognised as an impairment loss applying the requirements above for assets directly attributable to a group.

An entity must recognise in profit or loss a reversal of some or all of an impairment loss previously recognised applying the requirements above and increase the carrying amount of the asset, to the extent that the impairment conditions no longer exist or have improved.³²⁸

It is observed in the Basis for Conclusions that the impairment test is intended to be consistent with the impairment test for capitalised contract costs in IFRS 15 and therefore an entity recognises an impairment loss in profit or loss and reduces the carrying amount of an asset for insurance acquisition cash flows so that it does not exceed the expected net cash inflow for the related group.³²⁹

The Basis for Conclusions also observes that an asset for insurance acquisition cash flows is measured at a group level. An impairment test at a group level compares the carrying amount of an asset for insurance acquisition cash flows allocated to a group with the expected net cash inflow of the group. That net cash inflow includes cash flows for contracts unrelated to any expected renewals but expected to be in that group. The Board, therefore, decided to require an additional impairment test specific to cash flows for expected renewals. The additional impairment test results in the recognition of any impairment losses when the entity no longer expects the renewals supporting the asset to occur or expects the net cash inflows to be lower than the amount of the asset. Without the additional impairment test, cash flows unrelated to any expected renewals might prevent the recognition of such an impairment loss.³³⁰

- ³²⁶ IFRS 17.28E-F.
- ³²⁷ IFRS 17.B35D.
- ³²⁸ IFRS 17.28F.
- ³²⁹ IFRS 17.BC184J.

³³⁰ IFRS 17.BC184K.

Illustration 51 – Applying the two impairment tests for an insurance acquisition cash flow asset

At the beginning of Year 1 an entity pays commissions of CU38 relating to a group of contracts yet to be issued. Those commissions meet the definition of insurance acquisition cash flows.

The commissions are directly attributable to insurance contracts the entity expects to issue later in Year 1 (Group 1). The entity expects that some policyholders of those insurance contracts that will be issued in Year 1 will renew those contracts in Year 2 (Group 2), Year 3 (Group 3) and Year 4 (Group 4). Accordingly, at the beginning of Year 1, the entity allocates the commissions of CU38 on a systematic and rational basis to the expected future groups of insurance contracts as follows:

- ▶ Group 1 CU25
- Group 2 CU5
- ► Group 3 CU5
- ► Group 4 CU3

The entity recognises an asset for insurance acquisition cash flows of CU38 at the beginning of Year 1.

At the end of Year 1, the entity derecognises the asset of CU25 allocated to Group 1 and includes the insurance acquisition cash flows in the measurement of Group 1. At the end of Year 1, there are no facts and circumstances indicating that the assets for insurance acquisition cash flows allocated to each of Groups 2 to 4 may be impaired. Therefore, at the end of Year 1, the carrying amount of the asset for insurance acquisition cash flows is CU13 (i.e., CU5 + CU5 + CU3 as per above).

At the end of Year 2, the entity derecognises the asset of CU5 allocated to Group 2 and includes the insurance acquisition cash flows in the measurement of Group 2. At the end of Year 2, facts and circumstances indicate that the asset for insurance acquisition cash flows for Groups 3 and 4 may be impaired. The carrying amount of the asset for insurance acquisition cash flows subject to impairment testing is CU8 (i.e., CU5 + CU3 as per above).

To perform the impairment tests the entity estimates the following amounts:

	Year 3 (Group 3)	Year 4 (Group 4)
Expected net fulfilment cash inflows	CU	CU
Expected renewals Other than renewals (new contracts to be issued)	3 6	1
Total expected net cash inflows Asset for insurance acquisition cash flows	9 5	2 3
Impairment		(1)
Illustration 51 – Applying the two impairment tests for an insurance acquisition cash flow asset (cont'd)

Applying the additional impairment test specific to insurance acquisition cash flows allocated to expected contract renewals, the entity compares the amount of insurance acquisition cash flows allocated to expected renewals to the total expected net cash inflows for those expected renewals, as follows:

	Year 3 (Group 3)	Year 4 (Group 4)	Total
Expected net fulfilment cash inflows	CU	CU	CU
Amount of insurance acquisition cash flows allocated to expected renewals	5	3	8
Expected net cash inflows for expected renewals	3	1	4
Impairment			(4)

Accordingly, the entity recognises an expense in profit or loss an impairment of CU4 comprising of: $^{\rm 331}$

- CU1 identified applied paragraph B35D(a) of IFRS 17; and
- CU4 identified applying paragraph B35D(b)(i) of IFRS 17 less CU1 already identified above applying paragraph B35D(ii) of IFRS 17.

After recognising the total impairment loss of CU4, the entity will allocate the total amount of insurance acquisition cash flows remaining in assets of CU4 to groups of contracts still to be recognised (Group 3 and Group 4) on a systematic and rational basis.

How we see it

- As discussed at 7.3 and 9.1 above, IFRS 17 does not contain specific requirements for how to allocate the acquisition cash flows to different (future) groups of insurance contracts on a systematic and rational basis. Therefore, determining such an allocation will be a matter of judgement based on facts and circumstances.
- The standard requires that an entity an entity revises the amounts of the asset for insurance acquisition cash flows allocated to each (future) group of insurance contract according to the applied systematic and rational method. The impairment test for the insurance acquisition cash flows allocated to a (future) group would be applied after carrying through any revised allocation. Such revised allocation may reduce the risk of an impairment of the amount of insurance acquisition cash flows allocated to a particular (future) group, although the entity would have to perform any revisions consistent with the systematic and rational basis for allocation.

³³¹ IFRS 17.B35D.

9.11. Insurance contracts issued by mutual entities

A mutual entity accepts risks from each policyholder and pools those risks. However, a defining feature of a mutual entity is that the most residual interest of the entity is due to a policyholder and not to a shareholder. Thus, the fulfilment cash flows of an insurer that is a mutual entity generally include the rights of policyholders to the whole of any surplus of assets over liabilities. This means that, for an insurer that is a mutual entity, there should, in principle, normally be no equity remaining and no net comprehensive income reported in any accounting period.³³² In addition, the Basis for Conclusions clarifies that not all entities that may be described as mutual entities have the feature that the most residual interest of the entity is due to a policyholder.³³³

Payments to policyholders with a residual interest in a mutual entity vary depending on the returns on underlying items - the net asset of the mutual entity. These cash flows (i.e., the payments that vary with the underlying items) are within the boundary of an insurance contract.³³⁴ Although policyholders with a residual interest in the entity bear the pooled risk collectively, the mutual, as a separate entity has accepted risk from each individual policyholder and therefore the risk adjustment for non-financial risk for these contracts reflects the compensation the mutual entity requires for bearing the uncertainty from non-financial risk in those contracts. However, because the net cash flows of the mutual entity are returned to policyholders, applying IFRS 17 to contracts with policyholders with a residual interest in the mutual entity will result in no contractual service margin for those contracts.

Mutual entities may also issue insurance contracts that do not provide the policyholder with a residual interest in the mutual entity. Consequently, groups of such contracts are expected to have a contractual service margin. Determining whether a contract provides the policyholder with a residual interest in the mutual entity requires consideration of all substantive rights and obligations.

The IASB also suggested that to provide useful information about its financial position a mutual can distinguish between:

- Liabilities attributable to policyholders in their capacity as policyholders
- Liabilities attributable to policyholders with the most residual interest in the entity

The statement of financial performance could include a line item 'income or expenses attributable to policyholders in their capacity as policyholders before determination of the amounts attributable to policyholders with the most residual interest in the entity'.

The IASB decided not to develop specific guidance for, or defining mutual entities because:³³⁵

³³² IFRS 17.BC265.

³³³ IFRS 17.BC265FN27.

³³⁴ IFRS 17.B65(c).

³³⁵ IFRS 17.BC269B.

- A core principle of IFRS 17 is the requirement to include in the fulfilment cash flows all the expected future cash flows that arise within the boundary of insurance contracts, including discretionary cash flows and those due to future policyholders
- If entities were required to account for the same insurance contract differently depending on the type of entity issuing the contract, comparability among entities would be reduced
- A robust definition of a mutual entity to which different requirements would apply would be difficult to create

9.12. Other matters

9.12.1. Impairment of insurance receivables

IFRS 17 does not refer to impairment of insurance receivables (e.g., amounts due from policyholders or agents in respect of insurance premiums).

A premium receivable (including premium adjustments and instalment premiums) is a right arising from an insurance (or reinsurance) contract. Rights and obligations under contracts within the scope of IFRS 17 are excluded from the scope of IFRS 9 (see 2.3 above). As a premium receivable is a cash flow it is measured on an expected present value basis (see 9.2 above) which should include an assessment of credit risk. This cash flow is remeasured at each reporting date. Receivables from insurance contracts are not required to be disclosed separately on the statement of financial position but are subsumed within the overall insurance contract balances (see 15 below).

How we see it

Receivables not arising from insurance contracts (such as those arising) from a contractual relationship with an intermediary) are within the scope of IFRS 9. When an insurer uses an intermediary, judgement may be required to determine whether insurance receivables from an intermediary on behalf of a policyholder are within the scope of IFRS 17 or IFRS 9. A similar judgement is necessary for other amounts held by intermediaries such as funds withheld to pay future claims as well as loans to intermediaries. For example, if the policyholder has remitted premiums due to the insurer, under the terms of an insurance contract, to an intermediary and the intermediary defaults on remitting those premiums to the insurer, can the insurer enforce payment of the premiums by the policyholder? That is, the distinguishing factor is whether the intermediary is acting on behalf of the policyholder (in which case, any balances held by the intermediary are expected to be within the scope of IFRS 17) or on behalf of the insurer (in which case, any balances held by the intermediary are expected to be within the scope of IFRS 9).

9.12.2. Policyholder loans

Some insurance contracts permit the policyholder to obtain a loan from the insurer with the insurance contract acting as collateral for the loan. Under IFRS 4, policyholder loans may have been separated from insurance contract balances and shown as separate assets. IFRS 17 regards a policyholder loan as an example of an investment component with interrelated cash flows which is not separated from the host insurance contract.³³⁶ Consequently, a policyholder loan is included within the overall insurance contract balance and is part of the fulfilment cash flows (and is not within the scope of IFRS 9).

The repayment or receipt of amounts lent to and repaid by policyholders does not give rise to insurance revenue (see 15.1 below). However, the contractual service margin is adjusted for any difference between a loan to a policyholder expected to become payable or repayable in a period and the actual loan that becomes payable or repayable in a period, after adjusting for insurance finance income or expense related to that expected payment or repayment before it becomes payable or repayable (see 9.6.3 above).

A waiver of a loan to a policyholder would be treated the same way as any other claim.

There may be situations when an insurance policy is collateral for a stand-alone loan, not stemming from the contractual terms of an insurance contract and not highly interrelated with an insurance contract. Such a loan would be within the scope of IFRS 9.

³³⁶ IFRS 17.BC114.

10.Premium allocation approach

The premium allocation approach is an optional simplified form of measuring an eligible group of insurance contracts issued or reinsurance contracts held. The eligibility is assessed for each group of insurance contracts and the election is made for each eligible group. However, the ability to use the premium allocation approach for reinsurance contracts held must be assessed separately from the use of the premium allocation approach for the related underlying insurance contracts covered by reinsurance (see 11.6).

The IASB considers the premium allocation approach to be like the customer consideration approach in IFRS 15.³³⁷ Therefore, compared to the general model, using the premium allocation approach results in a simpler accounting method:

- The premium allocation approach does not require separate identification of the elements (i.e., the four building blocks) of the general model until a claim is incurred. Only a total amount for a liability for remaining coverage on initial recognition is determined (see 10.3 below).
- Subsequently, the liability for remaining coverage is recognised over the coverage period on the basis of the passage of time unless the expected pattern of release from risk differs significantly from the passage of time, in which case, it is recognised based on the expected timing of incurred claims and benefits (see 10.4 below).
- An entity need only assess whether a group of insurance contracts is onerous if facts and circumstances indicate that the group is onerous. The general model effectively requires an assessment of whether a group of contracts is onerous at each reporting date after the initial recognition of a group (see 9.8).
- An entity also has certain elections available once an entity decides to use the premium allocation approach for a group of insurance contracts (see 10.2 below).

How we see it

- The premium allocation approach is intended to produce an accounting outcome like that which resulted from the unearned premium approach used by many non-life or short-duration insurers under IFRS 4. The results from this approach are therefore likely to be more readily understood within the context of many short-duration contracts. However, there are some important differences:
- The liability for remaining coverage is measured using premiums received minus any insurance acquisition cash flows at the measurement date. The word 'received' is interpreted literally, rather than interpreted to mean amounts due (see 12.2 below). Under IFRS 4, the unearned premium provision would have often been set up based on premiums receivable, with a separate asset recorded for the premium receivable

³³⁷ IFRS 17.BC289.

- No separate asset is recognised for deferred acquisition costs, except for those assets in respect of insurance acquisition cash flows paid before the related group of insurance contracts is recognised (see 7.3 above). Instead, any acquisition cash flows are subsumed within the liability for remaining coverage, unless the entity elects to expense insurance acquisition cash flows (see 10.1 below).
- Most non-life or short-duration insurers would not usually have discounted their insurance liabilities under IFRS 4.
- The fulfilment cash flows model required for incurred claims, which is the same as the general model except for one simplification, is likely to be different than the incurred claim model used under IFRS 4.
- The liability for remaining coverage under the premium allocation approach will be the same as under the general model for groups of contracts that are onerous.

10.1. Criteria for use of the premium allocation approach

The premium allocation approach is permitted if, and only if, at the inception of the group of contracts one of the following conditions are met:³³⁸

- The entity reasonably expects that such simplification would produce a measurement of the liability for remaining coverage for the group that would not differ materially from the measurement that would be produced applying the requirements for the general model discussed in section 7 above (i.e., the fulfilment cash flows related to future service plus the contractual service margin).
- The coverage period of each contract in the group (including insurance contract services arising from all premiums within the contract boundary determined at that date applying the requirements discussed in section 9.1) is one year or less.

The second condition means that all contracts with a one-year coverage period or less qualify for the premium allocation approach, regardless of whether the first condition is met. However, for insurance contracts with a coverage period greater than one year (e.g., long-term construction insurance contracts or extended warranty-type contracts), entities will need to apply judgement in interpreting the meaning of "that would not differ materially" (see 10.1.2 below).

The first criterion above is not met if, at the inception of the group of contracts, an entity expects significant variability in the fulfilment cash flows that would affect the measurement of the liability for the remaining coverage during the period before a claim is incurred. Variability in the fulfilment cash flows increases with, for example:³³⁹

³³⁸ IFRS 17.53.

³³⁹ IFRS 17.54.

- The extent of future cash flows related to any derivatives embedded in the contracts
- > The length of the coverage period of the group of contracts

A discussion identifying the main sources of variability between the premium allocation approach and the general model is included at 10.1.1 below. A discussion of the meaning of 'differ materially in these circumstances' is included at 10.1.2 below.

Frequently asked questions

Question 10-1: Is an entity required or permitted to reassess a contract's eligibility for the premium allocation approach and as a result to revoke its election to apply the approach? [TRG meeting April 2019 – Agenda paper no. 2, Log S123]

An entity may apply the premium allocation approach to some insurance contracts provided that certain criteria are met at inception. As required by paragraph 53 of IFRS 17, the criteria are assessed for each group and the election is made for each group meeting the criteria. Given the eligibility criteria are assessed *at inception*, the standard does not require or permit reassessment of the eligibility criteria or the election to apply the approach subsequent to initial recognition.

If an entity applied the premium allocation approach to a contract that is subsequently modified to such an extent that the contract no longer meets the eligibility criteria, the entity must derecognise the original contract and recognise the modified contract as a new contract, applying IFRS 17 or other applicable standards.³⁴⁰

10.1.1. Main sources of difference between the premium allocation approach and the general approach

The first criterion for use of the premium allocation approach discussed at 10.1 above involves a comparison of the liability for remaining coverage under the general model and the premium allocation approach over the expected period of the liability for remaining coverage. This assessment is made at inception and is not reassessed subsequently.

Under all situations the liability for incurred claims is the same between the premium allocation approach and general model. This means that after the coverage period has expired there will be no difference between the two approaches, unless the election not to discount incurred claims, discussed at 10.2 below, is used. However, several situations exist under which the premium allocation approach and the general model could produce different measurements for the liability for remaining coverage during the coverage period, and therefore could impact the eligibility of the premium allocation approach used for assessing the applicability of the premium allocation approach. Three examples of potential sources of differences are, as follows:

³⁴⁰ IFRS 17.72(c).

- Changing expectations of profitability for the period of remaining coverage
 see 10.1.1.A below;
- ▶ Changing interest rates see 10.1.1.B below
- Uneven revenue recognition see 10.1.1.C below

10.1.1.A. Changing expectations of profitability for the period of remaining coverage

When the expectation of the remaining profitability changes during the coverage period of a group of insurance contacts, so that it is still profitable, the results can differ under the premium allocation approach and general model. In this situation, the premium allocation approach will not recognise this improvement or deterioration in profitability in an explicit way until the exposure is earned, whereas the general model will recognise a portion of this change in expectations now through the unwinding of the contractual service margin even though the exposure has not yet been earned.

The significance of this difference will vary depending on how likely it is that the expected profitability of the remaining coverage might change and how much it may vary by. However, if the change in expectation of future profitability is to such an extent that the contract becomes onerous under the general model, then both approaches will give the same results.

10.1.1.B. Changing interest rates

Under the premium allocation approach, if there is a significant financing component, an amount should be included for accretion of interest although this is based on the interest rate at the date of initial recognition of the group (see 9.3 above). As a result, the premium allocation approach never considers the current interest rates for the liability for remaining coverage, unlike the general model. So, if the discount rate changes significantly from the initial recognition of the contract this will result in a difference in the liability for remaining coverage between the premium allocation approach and the general model. The impact of this difference and its significance will depend on various factors including how large the discounting impact was originally, how large a change might reasonably be expected in the currency of the liabilities during the coverage period and the length of term of the liabilities, as longer-tailed contracts.

10.1.1.C. Uneven revenue recognition patterns

Under the premium allocation approach revenue is based on the passage of time or expected pattern of release of risk (see 10.4 below). However, under the general model, the contractual service margin is allocated based on coverage units reflecting the expected quantity of benefits and duration of each group of insurance contracts (see 9.7 above).

One example of where differences in revenue recognition between the two approaches could occur is contracts where the timing of when claims occur is not evenly spread over the passage of time due to the seasonality of claims. This could arise if the release of risk is 'significantly different from the passage of time'. For example, property insurance contracts exposed to catastrophes tend to have uneven earnings patterns.

Illustration 52– Comparison of the liability for remaining coverage under the general model and the premium allocation approach when there are changes in expected cash flows

Consider a group of contracts measured in accordance with the general model. A premium of CU2,000 is received at the beginning of a two-year coverage period. The entity estimates fulfilment cash flows in years 1 and 2 will be CU900 each year. The opening contractual service margin is CU200 [CU2,000 – CU900 – CU900 = CU200] (for illustration purposes, discount and risk adjustment are ignored).

The entity incurs claims in year one, as expected, of CU900. At the end of year one, the entity assumes that cash flows in the following year of coverage will increase from the previous estimate of CU900 to CU950. In terms of paragraph 44(c), this change in the fulfilment cash flows relates to future services and consequently reduces the contractual service margin from CU200 to CU150. The amount recognised as insurance revenue because of the transfer of services in the period, determined by the allocation of the contractual service margin remaining at the end of the reporting period (before any allocation) over the current and remaining coverage period applying paragraph B119 amounts to CU75 (CU150 ÷ 2).

	Contractual service margin
	CU
At beginning of year 1	200
Adjustment for future service	(50)
Allocation to profit or loss	(75)
At the end of year 1	75

The liability for remaining coverage at the end of year 1, in accordance with the general model, would be CU950 + CU75 = CU1,025.

Revenue in year 1 would be CU975 [expected insurance service expense of CU900 + release of the contractual service margin of CU75]. Revenue in year 2 would be CU1,025 [expected insurance service expense of CU950 + release of the contractual service margin of CU75].

If the entity had applied the premium allocation approach, it would have allocated CU1,000 to profit or loss in year 1 (assuming that the expected release of risk would still not be differing significantly from the release of risk at the end of year 1), as revenue and the liability for remaining coverage at the end of year 1 would be CU1,000, i.e., a different amount compared with the general model.

The requirement in the general model to allocate an amount of the contractual service margin in profit or loss after making adjustments for changes in expected cash flows relating to future service can cause the liability for remaining coverage (in accordance with the general model) to differ from the liability for remaining coverage (in accordance with the premium allocation approach).

10.1.2. Applying materiality for the premium allocation approach eligibility assessment

In order to gualify for the premium allocation approach under the first criterion at 10.1 above, the measurement for the liability for remaining coverage should not 'differ materially' from that produced applying the general model. Materiality is defined in IAS 1 and IAS 8 (by cross reference to IAS 1) as follows: ³⁴¹ 'Information is material if omitting, misstating or obscuring it could reasonably be expected to influence decisions that the primary users of general purpose financial statements make on the basis of those financial statements, which provide financial information about a specific reporting entity.' In addition to the general requirements of IAS 1 and IAS 8, there are specific materiality requirements in IFRS 17. Eligibility for the application of the premium allocation approach must be assessed for each group of insurance contracts³⁴² and therefore materiality should be considered at the group of contracts level. If the measurement of the liability for remaining coverage is not materially different for a group of insurance contracts measured using the premium allocation approach compared to that calculated using the general model in a range of scenarios that have a reasonable possibility of occurring, then the premium allocation approach can be adopted for that particular group.

How we see it

- The eligibility criteria required for use of the premium allocation approach under IFRS 17 means that not all contracts regulated as 'non-life' or 'short-duration' by local regulators will qualify for that approach.
- Contracts with a coverage period of one year or less are always eligible for the premium allocation approach. Those with a coverage period of more than a year may also be eligible. However, an entity must determine, at inception of a group of contracts, that the measurement of the liability for remaining coverage at each reporting date measured under the premium allocation approach will not be materially different from the outcome under the general model.
- IFRS 17 does not prohibit an entity from applying the premium allocation approach to eligible groups of contracts that would otherwise be required to apply the variable fee approach. However, the situations where such variable fee contracts would be eligible is likely to be limited to groups of contracts with a coverage period of one year or less. For groups of contracts with a coverage period of more than a year it will be very difficult to demonstrate that the outcome under the premium allocation approach will not be materially different from that under the variable fee model given the specific nature of contracts with direct participation features.
- As IFRS 17 does not contain any further specific guidance on how to determine whether outcomes are materially different, judgement will need to be applied in setting the thresholds and determining how these thresholds are applied.

³⁴¹ IAS 1.7, IAS 8.5.

³⁴² IFRS 17.53.

IFRS 17 also does not contain any specific guidance on what 'reasonably expects' entails. Therefore, an entity needs to apply judgement in identifying the range of relevant scenarios within the context of the specific features and circumstances of the group (e.g., duration of the contracts, expected profitability, volatility of profitability, earnings pattern, payment pattern, currency, etc.). The future scenarios should reflect the variability in the fulfilment cash flows the entity expects that would affect the measurement of the liability for remaining coverage during the period before a claim is incurred.

10.2. Elections under the premium allocation approach

Once an entity decides to use the premium allocation approach for a group of contracts, the following elections are available for the group, in certain circumstances:

- Whether to recognise insurance acquisition cash flows as an expense when it incurs those costs or to include those cash flows within the liability for remaining coverage (and hence amortise those cash flows over the coverage period). The ability of an entity to recognise insurance acquisition cash flows as an expense when it incurs those costs is available provided that the coverage period of each contract in the group on initial recognition is no more than one year. Otherwise acquisition cash flows must be included within the liability for remaining coverage³⁴³
- Whether or not to adjust the liability for remaining coverage to reflect the time value of money and the effect of financial risk. An entity is not required to adjust the liability for remaining coverage to reflect the time value of money and the effect of financial risk if, at initial recognition, the entity expects that the time between providing each part of the services and the related premium due date is no more than one year. Otherwise, the liability for remaining coverage must be adjusted to reflect the time value of money and the effect of financial risk using the discount rates as determined on initial recognition if the insurance contracts in the group have a significant financing component³⁴⁴
- A choice to not adjust the liability for incurred claims for the time value of money and the effect of financial risk if those cash flows are expected to be paid or received within one year or less from the date that the claims are incurred (see 10.5 below)

The diagram below shows the elections that are available for the liability for remaining coverage for groups of contracts measured in accordance with the premium allocation approach.

³⁴³ IFRS 17.59(a).
³⁴⁴ IFRS 17.56.



10.3. Measurement of the liability for remaining coverage on initial recognition

An entity measures the liability for remaining coverage on initial recognition of a group of insurance contracts eligible for the PAA that are not onerous, as follows:³⁴⁵

The premium, if any, received at initial recognition

Minus

 Any insurance acquisition cash flows at that date, unless the entity is eligible and chooses to recognise the payments as an expense (coverage period of a year or less)

Plus or minus

- Any amount arising from the derecognition at that date of:
 - Any asset for insurance acquisition cash flows that the entity paid before the related group of insurance contracts is recognised (see 7.3 above); and
 - Any other asset or liability previously recognised for cash flows related to the group of contracts (see 9.5 above).

As discussed at 10 above, premiums received means 'received' rather than receivable or due.

For contracts that are onerous, the liability for remaining coverage is determined by the fulfilment cash flows, as described in Section 9.8 below. For these contracts, a loss component is established as the excess of the fulfilment cash flows over the amount under the premium allocation approach as calculated above.

If the entity does not to use the election not to adjust the liability for remaining coverage to reflect the time value of money and the effect of financial risk (see 10.2 above), the carrying amount of the liability for remaining coverage must be adjusted to reflect the time value of money and the effect of financial risk using the discount rate as determined at initial recognition of the group when the insurance contracts in the group have a significant financing component. The discount rate is the rate at the date of initial recognition of the group determined using the requirements discussed at 9.3 above.³⁴⁶

If the entity is not able, or chooses not to recognise insurance acquisition cash flows as an expense when incurred (see 10.2 above), then the insurance acquisition cash flows are included in the measurement of the liability for remaining coverage. The effect of recognising insurance acquisition cash flows as an expense when incurred is to increase the liability for remaining coverage and hence reduce the likelihood of any subsequent onerous contract loss. There would be an increased profit or loss expense at the date the expense is incurred (which may be before the initial recognition of the contract) followed by an

³⁴⁵ IFRS 17.55(a).

³⁴⁶ IFRS 17.56.

increase in profit released from the liability for remaining coverage over the coverage period.

An entity applying the premium allocation approach should assume that no contracts in the portfolio are onerous at initial recognition unless facts and circumstances indicate otherwise. An entity should assess whether contracts that are not onerous at initial recognition have no significant possibility of becoming onerous subsequently by assessing the likelihood of changes in applicable facts and circumstances.³⁴⁷

If at any time during the coverage period, including at initial recognition, facts and circumstances indicate that a group of insurance contracts is onerous, an entity should calculate the difference between:³⁴⁸

The carrying amount of the liability for the remaining coverage as determined above

And

The fulfilment cash flows (see 9.2 to 9.4 above) that relate to the remaining coverage of the group of contacts

Any difference arising is recognised as a loss in profit or loss and increases the liability for remaining coverage.³⁴⁹ In performing the fulfilment cash flows calculation, above, if an entity does not adjust the liability for incurred claims to reflect the time value of money and the effect of financial risk, it should also not include any such adjustment in the fulfilment cash flows.³⁵⁰

The following diagram provides an overview of the premium allocation approach on initial recognition assuming the entity does not expense insurance acquisition cash flows as incurred:

Liability for remaining coverage at initial recognition

Premiums received less acquisition costs*	Contractual service margin
	Risk adjustment
	Expected cashflows (adjusted for time value of money)
Premium allocation approach	General model

* For groups of contracts that are not onerous and for which the entity chooses not to expense acquisition cash flows as incurred.

³⁴⁷ IFRS 17.18.

³⁴⁸ IFRS 17.57.

³⁴⁹ IFRS 17.58.

Frequently asked questions

Question 10-2: Do paragraphs 55(a)(i) and 55(b)(i) of IFRS 17 preclude the recognition of future premiums already invoiced but not yet paid and future premiums not yet invoiced in the measurement of the liability for remaining coverage applying the premium allocation approach? [TRG meeting February 2018 – Agenda paper no. 7, Log S23 and May 2018 – Agenda paper no. 6, Appendix A, Topic 2 S27]

The TRG members agreed with the IASB staff view that the words 'premiums, if any, received' in paragraphs 55(a) and 55(b)(i) of IFRS 17 means premiums actually received at the reporting date. It does not include premiums due or premiums expected. However, the TRG members noted that applying these requirements reflects a significant change from existing practice and this change will result in implementation complexities and costs. Subsequently, the IASB staff included this matter in an implementation challenges outreach report (issued in May 2018) which was provided to the IASB within the papers for the May 2018 IASB Board meeting. However, the IASB concluded not to amend the standard.

Illustration 53 –Measurement at initial recognition of a group of insurance contracts using the premium allocation approach

An entity issues a group of insurance contracts on 1 July 2023. The insurance contracts have a coverage period of 10 months that ends on 30 April 2024. The entity's annual reporting period ends on 31 December each year and the entity prepares interim financial statements as of 30 June each year.

The entity expects to receive premiums of CU1,220 and to pay directly attributable acquisition cash flows of CU20. It is anticipated that no contracts will lapse during the coverage period and that facts and circumstances do not indicate that the group of contracts is onerous.

The group of insurance contracts qualifies for the premium allocation approach. As the time between providing each part of the coverage and the related premium due is no more than a year, the entity chooses not to adjust the carrying amount of the liability for remaining coverage to reflect the time value of money and the effect of financial risk (therefore no discounting or interest accretion is applied). Further, the entity chooses to recognise the insurance acquisition cash flows as an expense when it incurs the relevant costs. All other amounts, including the investment component, are ignored for simplicity.

On initial recognition, assuming the premiums were received and the acquisition cash flows paid, the liability for remaining coverage is CU1,220 (i.e., the premium received). The acquisition cash flows of CU20 are expensed as incurred. If the premiums were not received on initial recognition (i.e., they are receivable at a later date) then the liability for remaining coverage is CU0.

How we see it

If the entity does not (to the extent they do not relate to future groups of insurance contracts). The effect of recognising insurance acquisition cash flows as an expense when incurred is an increase in the liability for remaining coverage. This will reduce the likelihood of any subsequent onerous contract loss. There would be an increased profit or loss expense at the date the cost is incurred that is offset by an increase in profit released from the liability for remaining coverage over the coverage period.

10.4. Subsequent measurement - liability for remaining coverage

At the end of each subsequent reporting period, assuming the group of insurance contracts is not onerous, the carrying amount of the liability is the carrying amount at the start of the reporting period:³⁵¹

- Plus the premiums received in the period
- Minus insurance acquisition cash flows, unless the entity is eligible and chooses to recognise the payments as an expense (see 10.1 above)
- Plus any amounts relating to amortising insurance acquisition cash flows recognised as an expense in the reporting period, unless the entity is eligible and chooses to recognise the payments as an expense
- Plus any adjustment to a financing component, if any (see below)
- Minus the amount recognised as insurance revenue for services provided in that period
- Minus any investment component paid or transferred to the liability for incurred claims

³⁵¹ IFRS 17.55(b).

This can be illustrated by the following diagram:



If a group of insurance contracts was onerous at initial recognition, then an entity would continue to compare the carrying amount of the liability for remaining coverage as calculated above with the fulfilment cash flows and recognise any further deficits or surpluses (to the extent that the fulfilment cash flows still exceed the liability for remaining coverage on a cumulative basis) in profit or loss.

Under the premium allocation approach, insurance revenue for the period is the amount of expected premium receipts (excluding any investment component and after adjustment to reflect the time value of money and the effect of financial risk, if applicable) allocated to the period for services provided. An entity should allocate the expected premium receipts to each period of insurance contract services: ³⁵²

- On the basis of the passage of time; but
- If the expected pattern of release of risk during the coverage period differs significantly from the passage of time (which might be the case, for example, if claims were skewed towards a particular time of year such as the 'hurricane season'), on the basis of the expected timing of incurred insurance service expenses.

An entity should change the basis of allocation between the two methods (passage of time and incurred insurance service expenses) as necessary if facts and circumstances change.³⁵³

The following example illustrates the subsequent measurement of a group of insurance contracts using the premium allocation approach assuming the same fact pattern as Illustration 53 above.

 ³⁵² IFRS 17.B126.
 ³⁵³ IFRS 17.B127.

Illustration 54 – Measurement subsequent to initial recognition of a group of insurance contracts using the premium allocation approach

Assuming the same fact pattern as Illustration 53.

On initial recognition, the entity receives all premiums and pays all acquisition cash flows. The entity expects to be released from risk evenly over the 10-month contract period. At the reporting date (31 December 2023), the contract is still not expected to be onerous.

For the six-month reporting period ending on 31 December 2023, the entity recognises insurance revenue of CU 732 (i.e., 60% of CU1,220). The insurance acquisition cash flows of CU 20 are recognised as insurance service expense (as per Illustration 53 above, the entity has chosen to recognise the acquisition cash flows as incurred and not over the passage of time).

At 31 December 2023, the liability for remaining coverage is CU488 (i.e., CU 1,220 – CU 732 or 40% of CU1,220). Note that, alternatively, if premiums were not received/paid until 1 January 2024, the liability for remaining coverage would be an asset of CU 732 at 31 December 2023.

For the six-month reporting period ending 30 June 2024, the entity recognises the remaining CU 488 as insurance revenue and there is no liability for remaining coverage at 30 June 2024.

Frequently asked questions

Question 10-3: How should differences between expected premiums and actual premiums which relate to current or past service be accounted for applying the premium allocation approach? [TRG meeting September 2018 – Agenda paper no. 4, Log S53]

The TRG agreed with an IASB staff paper which stated that any premium experience adjustments under the premium allocation approach are part of expected premium receipts. Therefore, they are allocated to insurance revenue on the basis of either the passage of time or the expected release from risk (see above). If the expected pattern of release of risk differs significantly from the passage of time, the expected premium receipts are allocated over the coverage period on the basis of the expected timing of the incurred insurance service expense.

How we see it

- The liability for remaining coverage may be an asset balance if premiums are received after the recognition of revenue. This is because revenue is determined by the provision of services, independent of the receipt of cash.
- Judgement will be required in interpreting 'differs significantly from the passage of time' in order to determine the appropriate basis to allocate insurance revenue to the period for services provided.
- A change in the basis of allocating insurance between the two methods (passage of time and incurred insurance service expenses) results from new information and accordingly is not a correction of an error and will be accounted for prospectively as a change in accounting estimate.

- The approach to allocate premium experience adjustments (i.e., the difference between the premium receipt expected at the beginning of the period and the actual premium cash flows received in the period) to insurance revenue on the basis of either the passage of time or the expected release from risk does not appear to preclude an entity from allocating any premium experience adjustment to both past and future services and, hence, recognise the resulting revenue relating to past services in the current period. Splitting the premium experience adjustment between past and future periods adds complexity.
- IFRS 17 contains the principle that changes in fulfilment cash flows relating to past service should not adjust the contractual service margin but be recorded in profit or loss for the period. Considering this principle, it would be appropriate to also record changes in expected future premiums of the liability for remaining coverage that relate to past service in profit or loss as an adjustment to insurance revenue for the period (rather than as an adjustment to the contractual service margin). This would result in a treatment consistent with that of premium experience adjustments mentioned in the previous observation.

10.5. Subsequent measurement - liability for incurred claims

The liability for incurred claims for a group of insurance contracts subject to the premium allocation approach (which should usually be nil on initial recognition) is measured in the same way as the liability for incurred claims using the general model (i.e., a discounted estimate of future cash flows with a risk adjustment for non-financial risk). See 9.6.2 above.

However, when applying the premium allocation method to the liability for remaining coverage, an entity is, for the liability for incurred claims, an entity is not required to adjust future cash flows for the time value of money and the effect of financial risk if those cash flows (for that group of insurance contracts) are expected to be paid or received in one year or less from the date the claims are incurred.³⁵⁴ This is a separate election from the choice not to adjust the carrying amount of the liability for remaining coverage to reflect the time value of money and the effect of financial risk at initial recognition (see 10.2 above).

When the entire insurance finance income or expenses is included in profit or loss, incurred claims are discounted at current rates (i.e., the rate at the reporting date). When insurance finance income or expenses is disaggregated between profit or loss and other comprehensive income (see 15.3 below) the amount of insurance finance income or expenses included in profit or loss is determined using the discount rate at the date of the incurred claim. See 9.3 above.

³⁵⁴ IFRS 17.59(b).

Frequently asked questions

Question 10-4: Why is the option in paragraph 59(b) where an entity is not required to adjust future cash flows in the liability for incurred claims for the time value of money and the effect of financial risk if those cash flows are expected to be paid or received in one year or less from the date the claims are incurred, limited to groups of contracts applying the premium allocation approach? [TRG meeting September 2018 - Agenda paper no. 11, Log S64]

This practical expedient is a simplification that applies only to groups of insurance contracts accounted for applying the premium allocation approach which is a simplified approach. Applying the requirements of IFRS 17 to contracts applying the general model, subject to materiality considerations, an entity is required to adjust the estimates of future cash flows to reflect the time value of money and the effect of financial risk.

Illustration 55 – Subsequent measurement of the liability for incurred claims using the premium allocation approach

Assuming the same fact pattern as Illustration 53.

For the six-month reporting period ending on 31 December 2023, there were claims of CU 636 incurred, including a risk adjustment for non-financial risk related to those claims of CU 36. None of the claims have been paid at the reporting date. The claims will be paid within one year after the claims are incurred. Therefore, the entity chooses not to adjust the liability for incurred claims for the time value of money and the effect of financial risk.

At 31 December 2023, the liability for incurred claims is CU 636, which is also the amount for incurred claims recorded in profit or loss as insurance service expenses.

For the six-month reporting period ending on 30 June 2024, there were claims incurred of CU 424, including a risk adjustment for non-financial risk related to those claims of CU 24. During the period claims of CU 800 were paid.

At 30 June 2024 the total liability for incurred claims and the risk adjustment for non-financial risk is CU 260 (i.e. CU 636 + CU 400 + CU 24 - CU 800). The total incurred claims recognised in profit or loss as insurance service expenses for the six-month reporting period ending on 30 June 2024 is CU 424 (i.e., CU 400 + CU 24).

How we see it

- It is possible that a group of insurance contracts may exist for which the entity would be eligible not to adjust the liability for remaining coverage for time value of money (because the coverage period and the premium due date are within one year); but for which it may have to discount the liability for incurred claims (because the claims are not expected to settle within one year or less from the date in which they are incurred). This would likely be the case for products with short coverage periods and long-tail claim settlement periods.
- IFRS 17 does not state whether the discounting election above relating to the liability for incurred claims is irrevocable or not. There may be circumstances in which groups of claims that were expected originally to be settled within one year (and, hence, not discounted) subsequently turn out to take much longer to settle. In those circumstances, an entity should start discounting the claims in the period in which it identifies such change and account for it prospectively (as this is a change in estimate).

11.Reinsurance contracts held

A reinsurance contract is an insurance contract issued by one entity (the reinsurer) to compensate another entity for claims arising from one or more insurance contracts issued by the other entity (underlying contracts).³⁵⁵



IFRS 17 requires a reinsurance contract held to be accounted for separately from the underlying insurance contracts to which it relates. This is because an entity that holds a reinsurance contract (a cedant) does not normally have a right to reduce the amounts it owes to the underlying policyholder by amounts it expects to receive from the reinsurer. It is acknowledged in the Basis for Conclusions that separate accounting for the reinsurance contracts and their underlying insurance contracts might create mismatches that some regard as purely accounting, for example; on the timing of recognition, the measurement of the reinsurance contracts and the recognition of profit. However, the Board concluded that accounting for a reinsurance contract held separately from the underlying insurance contracts gives a faithful representation of the entity's rights and obligations and the related income and expenses from both contracts.³⁵⁶ Examples of potential accounting mismatches are:

- Contract boundaries for reinsurance held may differ from those of the underlying direct insurance contracts. As a result, accounting for reinsurance held requires the cedant (insurer) to estimate cash flows for underlying direct contracts that have not been issued yet but are within the boundary of the reinsurance contract (see 11.2 below).
- Underlying insurance contracts may meet one of the criteria to apply the premium allocation approach, but the related reinsurance contracts do not, possibly because the contract boundary of the reinsurance contract differs from that of the underlying insurance contracts (see 1.6 below).
- Reinsurance held cannot be accounted for under the variable fee approach even if the underlying direct insurance contracts are accounted for under the variable fee approach (see 11.7 below).

A modified version of the general model is applied by cedants for reinsurance contracts held. This is to reflect that: $^{\rm 357}$

- Groups of reinsurance contracts held are usually assets rather than liabilities
- Entities holding reinsurance contracts generally pay a margin to the reinsurer as an implicit part of the premium rather than making profits from the reinsurance contracts

³⁵⁵ IFRS 17 Appendix A.

³⁵⁶ IFRS 17.BC298.

³⁵⁷ IFRS 17.BC302.

A further consideration is that most reinsurance contracts held will be 'loss making' if the underlying insurance contracts to which they relate are profitable. Given that IFRS 17 does not permit gains on initial recognition of insurance contracts issued, it would seem inappropriate to require anticipated losses on related reinsurance contracts held to be expensed on initial recognition. This would create an accounting mismatch.

The following table includes a comparison between the general model for insurance contracts issued and modifications of the general model for reinsurance contracts held:

Ge co	meral model for insurance ntracts issued	Modifications of general model for reinsurance contracts held			
Recognition					
A g issu ear	roup of insurance contracts ued shall be recognised from the lier of: (see 7 above) The beginning of the coverage period of the group of contracts Or	A gro shall T p c	up of reinsurance contracts held be recognised from the earlier of: he beginning of the coverage eriod of the group of reinsurance ontracts held		
•	The date when the first payment from a policyholder in the group becomes due Or For a group of onerous contracts, when the group becomes onerous	 A w u A sim propo below 	ny gain on initial recognition which covers losses of onerous nderlying insurance contracts plification exists for prtionate reinsurance (see 11.3 /)		
Me	easurement				
The contract boundary requirements under the general model apply also to reinsurance contracts held (see 11.2 below). However, due to different terms and conditions of the reinsurance contracts held, contract boundaries for reinsurance held may differ from those of the underlying direct insurance contracts.					
Assumptions used for measurement should be consistent with the assumptions used for measurement of the underlying insurance contracts issued (see 11.4.1 below)					
The fina con req abc	e risk adjustment for non- ancial risk reflects the npensation that the insurer uires for bearing the uncertainty out the amount and timing of the	The r risk re trans reinst	isk adjustment for non-financial eflects the amount of the risk ferred from the insurer to the urer. ³⁵⁸		

³⁵⁸ IFRS 17.64.

General model for insurance contracts issued	Modifications of general model for reinsurance contracts held	
cash flows that arises from non- financial risk (see 9.4).		
The non-performance risk of the insurer must not be reflected in the fulfilment cash flows of the insurance contracts issued (see 9.2).	Non-performance risk of the reinsurer should be included in the measurement of the fulfilment cash flows of the reinsurance contracts held (see 11.4.4 below).	
Day 1 gains are initially recognised in the statement of financial position as a contractual service margin and recognised in profit or loss as the insurer renders services. In contrast, all day 1 losses are recognised in profit or loss immediately.	 All day 1 differences are initially recognised in the statement of financial position as a contractual service margin and recognised in profi or loss as the reinsurer renders services, except for: Any portion of a day 1 difference (i.e., the net cost of purchasing reinsurance cover) that relates to events before initial recognition of the reinsurance contract held 	
	 Any day 1 gain on initial recognition of the reinsurance contract held which is expected to recover the losses at initial recognition of onerous underlying insurance contracts. (See 11.4 below). 	
Changes in the fulfilment cash flows adjust the contractual service margin if they relate to future coverage and other future services (see 9.7).	Changes in the fulfilment cash flows adjust the contractual service margin if they relate to future coverage and other future services. However, changes in fulfilment cash flows are recognised in profit or loss if the related changes in the underlying contracts are also recognised in profit or loss when the underlying contracts are onerous (See 11.5 below).	

How we see it

- Key considerations arising for insurers will be the extent of any accounting mismatches arising from the different treatment of reinsurance contracts held compared to the underlying insurance contracts.
- Accounting mismatches may arise from the requirement to account for reinsurance contracts held separately from the underlying insurance contracts. One example of this is that a different measurement model (e.g., General model, Premium Allocation Approach, Variable Fee approach) could be applied to the underlying insurance contracts than that one applied to the reinsurance held.

11.1. Level of aggregation

An entity should divide portfolios of reinsurance contracts held by applying the same criteria as for insurance contracts issued discussed in section 6 above, with the provision that references to onerous contracts (see 9.8 above) should be replaced with a reference to contracts on which there is a net gain on initial recognition. ³⁵⁹ This appears to mean that a portfolio of reinsurance contracts held should be divided at least into:

- A group of contracts on which there is a net gain on initial recognition (i.e., a net inflow), if any
- A group of contracts that have no significant possibility of a net gain arising subsequent to initial recognition, if any
- A group of the remaining contracts in the portfolio

An entity is not allowed to group contracts purchased more than a year apart. A group of contracts is not reassessed after initial recognition. It is acknowledged by IFRS 17 that, for some reinsurance contracts held, applying the general model, as modified, will result in a group that comprises a single contract.³⁶⁰

A reinsurance contract held cannot be onerous. Therefore, the requirements for onerous contracts in the general model (see 9.8 above) do not apply.³⁶¹

Frequently asked questions

Question 11-1: Should a reinsurance contract held be separated into components for measurement purposes to reflect the underlying contracts covered? For example, should a reinsurance contract held that provides coverage to underlying contracts that are included in different groups of insurance contracts be separated? [TRG meeting February 2018 – Agenda paper no. 1, Log S19]

Within the context of considering separation of insurance components of a single insurance contract (see 6.1 above), the TRG observed that the fact that a reinsurance contract held provides cover for underlying contracts that are included in different groups is not, in itself, sufficient to conclude that accounting for the reinsurance contract held as a single contract does not reflect the substance of its contractual rights and obligations.

³⁵⁹ IFRS 17.61.

 ³⁶⁰ IFRS 17.61.
 ³⁶¹ IFRS 17.68.

11.2. The boundary of a reinsurance contract held

The contract boundary requirements of IFRS 17 (see 9.1 above) apply also to reinsurance contracts held.

Frequently asked questions

Question 11-2: How should an entity read paragraph 34 of IFRS 17 regarding the boundary of an insurance contract with respect to reinsurance contracts held? [TRG meeting February 2018 – Agenda paper no. 3, Log S15 and S18; TRG meeting September 2018 – Agenda paper no. 5]

In some cases, reinsurance contracts held will offer protection for underlying contracts that an entity has not yet issued. The question arises as to whether the boundary of a reinsurance contract held should include those anticipated cash flows from unissued underlying contracts (which will not have been recognised as underlying insurance contracts by the entity).

In February 2018, this issue was discussed by the TRG who agreed with the IASB staff's conclusion that the application of the contract boundary requirements to reinsurance contracts held means that cash flows within the boundary of a reinsurance contract held arise from substantive rights and obligations of the entity, i.e., the holder of the contract. Therefore:

- A substantive right to receive services from the reinsurer ends when the reinsurer has the practical ability to reassess the risks transferred to the reinsurer and can set a price or level of benefits for the contract to fully reflect the reassessed risk, or when the reinsurer has a substantive right to terminate the contract.
- Accordingly, the boundary of a reinsurance contract held could include cash flows from underlying contracts covered by the reinsurance contract that are expected to be issued by the cedant in the future.

This means that an entity will need to estimate the fulfilment cash flows of contracts it expects to issue that will give rise to cash flows within the boundary of the reinsurance contracts that it holds. Some stakeholders argued that this will result in an accounting mismatch between the direct insurance contracts issued and the reinsurance contracts held. However, the Basis for Conclusions states that the IASB disagreed that differences between the carrying amount of the reinsurance contract held and the underlying insurance contracts are accounting mismatches. The carrying amount of a reinsurance contract held is nil before any cash flows occur or any service is received. Thereafter any difference that arise between the carrying amount of the reinsurance contract held and the underlying insurance contracts are not accounting mismatches, but differences caused by: ³⁶²

- The provision of coverage, for example because the reinsurer provides coverage for less than 100% of the risks the entity covers
- The timing of cash flows

³⁶² IFRS 17.BC309E.

Frequently asked questions (cont'd)

Interest accreted on the contractual service margin of the reinsurance contract held from an earlier period than, and at a different discount rate from, the interest accreted on the contractual service margin of the underlying insurance contracts, reflecting the different effects of the time value of money on the contractual service margin and fulfilment cash flows

The TRG members observed that applying this requirement is likely to result in operational complexity because it is a change from existing practice under IFRS 4. This increase in cost and complexity resulting from a change in existing practice is acknowledged in the Basis for Conclusions, but the IASB concluded that the benefits of appropriately reflecting an entity's rights and obligations as the holder of a reinsurance contract outweigh those costs.³⁶³

In addition, some reinsurance contracts held may contain break clauses which allow either party to cancel the contract at any time following a specified notice period. The TRG members observed that, in an example of a reinsurance contract which:

- Is issued and recognised on 1 January
- Covers a proportion of all risks arising from underlying insurance contracts issued in a 24-month period
- Provides the unilateral right to both the cedant and the reinsurer to terminate the contract with a three-month notice period to the other party with respect to only new business ceded

the initial contract boundary would exclude cash flows related to premiums outside of that three-month notice period.

In September 2018, the IASB staff clarified to TRG members that if, at the end of the three months, neither the entity nor the reinsurer had given notice to terminate the reinsurance contract with respect to new business ceded, this would not cause a reassessment of the contract boundary. This is because the contract boundary determination at initial recognition (i.e., three months) was not based on an assessment of the practical ability to set a price that fully reflected the risk in the contract. (In other words, a contract boundary is only reassessed if there has been a change in circumstances which affect the assessment of whether an entity's substantive rights and obligations have commercial substance). The cash flows related to underlying contracts that are expected to be issued and ceded in the next three-month period are cash flows outside the existing contract boundary. In response to a concern that this may result in daily reinsurance contracts being recognised, the IASB staff observed that reinsurance contracts held are recognised only when the recognition criteria are met (i.e., when the coverage period begins). The contract boundary is determined at initial recognition and, in this example, that will result in a new reinsurance contract held being recognised after the end of the first three-month period with a contract boundary of cash flows arising from contracts expected to be issued in the following three months. Both of

³⁶³ IFRS 17.BC309F.

Frequently asked questions (cont'd)

these contracts held could belong to a single annual group of contracts applying the level of aggregation criteria.

The submission to the IASB staff in September 2018 included a fact pattern in which there is a unilateral right for the reinsurer to amend the rate of the ceding commission it pays, in addition to unilateral termination rights. The IASB staff observe that in this fact pattern, the existence of the right to terminate the contract with a three-month notice period determines the cash flows within the contract boundary regardless of the existence of a right to amend the rate of the ceding commission if the contract is not terminated. Therefore, the same accounting would apply to this additional fact pattern.

Question 11-3: How should the boundary of a reinsurance contract held be determined when the reinsurer has the right to reprice remaining coverage prospectively? [TRG meeting May 2018 – Agenda paper no. 4, Log S39]

The TRG discussed an IASB staff paper concerning the determination of the boundary of a reinsurance contract held when the reinsurer has the right to reprice remaining coverage prospectively. In the fact pattern provided, the reinsurer can adjust premium rates at any time, subject to a minimum three-month notice period and could choose either: (i) not to exercise the right to reprice, in which case, the holder of the reinsurance contract is committed to continue paying premiums to the reinsurer; or (ii) to exercise the right to reprice, in which case, the holder has the right to terminate coverage. The TRG members observed that:

For reinsurance contracts held, cash flows are within the contract boundary if they arise from substantive rights and obligations that exist during the reporting period in which the entity (i.e., the holder) is compelled to pay amounts to the reinsurer or in which the entity has a substantive right to receive services from the reinsurer.

- A right to terminate coverage that is triggered by the reinsurer's decision to reprice the reinsurance contract is not relevant when considering whether a substantive obligation to pay premiums exists. Such a right is not within the entity's control and therefore the entity would continue to be compelled to pay premiums for the entire contractual term.
- The entity's expectations about the amount and timing of future cash flows, including with respect to the probability of the reinsurer repricing the contract, would be reflected in the fulfilment cash flows.

The TRG members also observed that, although the fact pattern in this example was limited in scope, it demonstrates the principle that both rights and obligations need to be considered when assessing the boundary of a contract.

Illustration 56 – The contract boundary of reinsurance contracts held

On 1 January, the insurer acquires a 100% proportionate reinsurance cover for a group of underlying insurance contracts it expects to issue over the next two years. The reinsurance contract includes a unilateral right to both the cedant and the reinsurer to terminate the contract with a six-month notice period to the other party with respect to only new business ceded.

An insurer expects to issue three one-year insurance contracts all within year one of the two-year period covered by the reinsurance contract. These contracts were issued on 1 January, 30 June and 31 December in year one respectively with their coverage period starting at the same date. 1 January in year one is the beginning of the coverage period of the group of underlying insurance contracts (paragraph 25(a) of IFRS 17). The coverage period for the group of underlying insurance contracts is from 1 January in year one to 30 December in year two. Assume the group of underlying insurance contracts is measured using the general model.

The reinsurance contract held is recognised on 1 January in year one. In this example the reinsurance contract held, as a single contract, is identified as a group of insurance contracts.

The contract boundary of the reinsurance contract held recognised on 1 January in year one includes cash flows related to premiums inside the six-month notice period. In applying the measurement requirements of paragraphs 32-36 of IFRS 17 to the reinsurance contract held, the insurer uses consistent assumptions to measure the estimates of the present value of the future cash flows for the reinsurance contracts held and the estimates of the present value of the future cash flows for the first two contracts, issued on 1 January and 30 June in year one, included in the group of underlying insurance contracts. The present value of the future cash flows of the reinsurance contract held would exclude cash flows related to premiums for the third contract, issued on 31 December.

The coverage period for the reinsurance contract held recognised on 1 January in year one is equal to the coverage period for the group of underlying insurance contracts, from 1 January in year one to 29 June in year two. However, the reinsurance contract held recognised on 1 January excludes the underlying contract issued on 30 December of year one.

The contract boundary and coverage period of the reinsurance contract held recognised on 1 January in year one are illustrated by the grey block in the illustration below:



How we see it

In some cases, reinsurance contracts held will offer protection for underlying contracts that an entity has not yet issued. If the reinsurance cash flows arising from the anticipated underlying contracts are within the boundary of a reinsurance contract, the measurement of the reinsurance contract will reflect those cash flows - as the standard requires that future cash flows within the boundary be taken into account. An entity will need to estimate the fulfilment cash flows of contracts it expects to issue that will give rise to cash flows within the boundary of the reinsurance contracts that it holds. The estimates must be adjusted as time passes and the underlying direct contracts that are subject to reinsurance are actually issued. Reinsurance fulfilment cash flows for future underlying contracts expected to be issued include an estimate of the amount of risk adjustment an entity expects will be transferred to the reinsurer when underlying contracts are recognised, as well as future fulfilment cash flows such as estimated reinsurance premiums and claim recovery cash flows.

11.3. Recognition

The recognition requirements for an insurance contract issued are modified for the purposes of the recognition of reinsurance contracts held.³⁶⁴ See section 7.2 above. In short, an entity should recognise a group of reinsurance contracts held on:

The beginning of the coverage period of the group of reinsurance contracts held, or if the reinsurance contracts provide proportionate coverage at the later of the beginning of the coverage period of the group, or the initial recognition of any underlying contract

And

The date the entity recognises an onerous group of underlying insurance contracts applying paragraph 25(c), if the entity entered into the related reinsurance contract held in the group of reinsurance contracts held at or before that date and, in all other cases, from the beginning of the coverage period of the group

In contrast, for contracts which do not provide proportionate coverage the recognition date is the start of the coverage period (unless the contract is onerous, in which case it is the date of signing). An example of such a contract is one that covers aggregate losses from a group of underlying contracts that exceed a specified amount.³⁶⁵

The coverage the entity benefits from starts at the beginning of the group of reinsurance contracts held because such losses accumulate throughout the coverage period.³⁶⁶ An example of such a contract is one that provides cover

³⁶⁴ IFRS 17.62.

³⁶⁵ IFRS 17.BC304.

³⁶⁶ IFRS 17.BC305(b).

for aggregate losses from a single event, in excess of a predetermined limit and with a fixed payable premium.

11.4. Measurement - initial recognition

11.4.1. Initial measurement - fulfilment cash flows

A reinsurance contract held must be measured using the same criteria for fulfilment cash flows and contractual service margin as an insurance contract issued to the extent that the underlying contracts are also measured using this approach. However, the entity must use consistent assumptions to measure the estimates of the present value of future cash flows for the group of both the reinsurance contracts held and the underlying insurance contracts.³⁶⁷

Frequently asked questions

Question 11-5: Paragraph 63 of IFRS 17 requires the use of assumptions for the measurement of the estimates of the present value of the future cash flows for a group of reinsurance contracts held that are consistent with those used to measure the underlying insurance contracts. Does this means that the use of an identical discount rate is required? [TRG meeting February 2018 – Agenda paper no. 7, Log S17]

The TRG agreed with the IASB staff that stated that 'consistent' in this context does not necessarily mean 'identical' (i.e., the use of an identical discount rate for measurement of the group of underlying insurance contracts and the related group of reinsurance contracts held was not mandated). The extent of dependency between the cash flows of the reinsurance contract held and the underlying cash flows should be evaluated in applying the requirements of paragraph 63 of IFRS 17.

Question 11-6: What discount rate should be used to measure the present value of future cash flows of a reinsurance contract held if the liquidity characteristics of the underlying contracts are different from those of the reinsurance contract held? [TRG meeting May 2018 – Agenda paper no. 7, Log S40]

The TRG agreed with the IASB staff when they noted that consistency is required to the extent that the same assumptions apply to both the underlying contracts and the reinsurance contracts held. In the IASB staff's view, this requirement does not require or permit the entity to use the same assumptions used (e.g., the same discount rates) for measuring the underlying contracts when measuring the reinsurance contracts held if those assumptions are not valid for the term of the reinsurance contracts held. If different assumptions apply for reinsurance contracts held, the entity uses those different assumptions when measuring the contract.

³⁶⁷ IFRS 17.63.

11.4.2. Measurement at initial recognition – contractual service margin

In determining the contractual service margin on initial recognition, the requirements of the general model are modified to reflect the fact that there is no unearned profit but, instead, a net gain or net cost on purchasing the reinsurance.

Hence, on initial recognition, unless the net cost of purchasing reinsurance coverage relates to events that occurred before the purchase of the group of reinsurance contracts, the entity should recognise any net cost or net gain on purchasing the group of reinsurance contracts held as a contractual service margin measured at an amount equal to the sum of:³⁶⁸

- The fulfilment cash flows
- The amount derecognised at that date of any asset or liability previously recognised for cash flows related to the group of reinsurance contracts held
- Any cash flows arising at that date

And

 Any income recognised in profit or loss when an entity recognises a loss on initial recognition of an onerous group of underlying contracts (see 11.4.3 below)

If expected cash outflows to a reinsurer exceed the sum of expected inflows and the risk adjustment, the contractual service margin represents a net cost of purchasing reinsurance.



If expected cash inflows from the reinsurer plus the risk adjustment exceed expected outflows, the contractual service margin represents a net gain of purchasing reinsurance.

³⁶⁸ IFRS 17.65.



If the net cost of purchasing reinsurance coverage relates to events that occurred before the purchase of the group of reinsurance contracts held, an entity should recognise such a cost immediately in profit or loss as an expense.³⁶⁹.

It is stated in the Basis for Conclusions that the IASB decided that the net expense of purchasing reinsurance should be recognised over the coverage period as services are received unless the reinsurance covers events that have already occurred. For such reinsurance contracts held, the Board concluded that entities should recognise the whole of the net expense at initial recognition, to be consistent with the treatment of the net expense of purchasing reinsurance before an insured event has occurred. The Board acknowledged that this approach does not treat the coverage period of the reinsurance contract consistently with the view that for some insurance contracts the insured event is the discovery of a loss during the term of the contract, if that loss arises from an event that had occurred before the inception of the contract. However, the Board concluded that consistency of the treatment of the net expense across all reinsurance contracts held would result in more relevant information.³⁷⁰

Measurement of a reinsurance contract held on initial recognition is illustrated by the following example, based on Example 11 in IFRS 17.³⁷¹ The initial recognition of reinsurance contracts in situations where a group of underlying insurance contracts is onerous at initial recognition as discussed at 11.4.3 below.

Illustration 57 — Measurement on initial recognition of groups of reinsurance contracts held [Example 11 in the Illustrative Examples to IFRS 17, IE124-129]

An entity enters into a reinsurance contract that, in return for a premium of CU300 m, covers 30% of each claim from the underlying insurance contracts. Applying the relevant criteria, the entity considers that the group comprises a single contract held. For simplicity, this example disregards the risk of non-performance of the reinsurer and all other amounts.

The entity measures the estimates of the present value of future cash flows for the group of reinsurance contracts held using assumptions consistent with those used to measure the estimates of the present value of the future cash

³⁶⁹ IFRS 17.65A.

³⁷⁰ IFRS 17.BC312.

³⁷¹ IFRS 17.IE124 129.

Illustration 57 — Measurement on initial recognition of groups of reinsurance contracts held [Example 11 in the Illustrative Examples

to IFRS 17, IE124-129] (cont'd)

flows for the group of the underlying insurance contracts, as shown in the table below:

	Underlying contracts	Reinsurance contracts
	CU m	CU m
Estimates of the present value of future cash inflows	1,000	270
Estimates of the present value of future cash outflows/premium paid	(900)	(300)
Risk adjustment for non-financial risk	(60)	18
Contractual service margin	(40)	12
Insurance contract asset/(liability) on initial recognition	-	-

The entity measures the present value of the future cash inflows consistent with the assumptions of the cash outflows of the underlying insurance contracts. Consequently, the estimate of cash inflows is CU270 m (i.e., 30% of CU900 m). The risk adjustment is determined to represent the amount of risk being transferred by the holder of the reinsurance contract to the issuer of the contract. Consequently, the risk adjustment, which is treated as an inflow rather than an outflow, is CU18 m (i.e., estimated to be 30% of 60).

The contractual service margin is an amount equal to the sum of the fulfilment cash flows and any cash flows arising at that date. In this example, there is a net loss on purchasing the reinsurance and the contractual service margin is an asset.

If the premium was only CU260 m, there would be a net gain of CU28 m on purchasing the reinsurance (i.e., inflows of CU270 m, plus the risk adjustment of CU18 m less outflows of CU260 m) and the contractual service margin would represent a liability of CU28 m to eliminate the net gain on inception.

How we see it

IFRS 17 provides no guidance as to how a cedant should account for the net cost of a reinsurance contract held, which provides both prospective and retrospective coverage. In these circumstances, an entity would need to apply judgement as to the portfolio to which a contract providing both prospective and retrospective coverage should be allocated and whether the legal contract could be split into separate retrospective and prospective insurance components, with each component allocated to different portfolios as an in-substance separate contract for accounting purposes, applying the guidance discussed at 6.1.1 above.

11.4.3. Initial measurement of reinsurance held of underlying insurance contracts that are onerous at initial recognition

An entity should adjust the contractual service margin of a group of reinsurance contracts held, As a result, it should recognise income when the entity recognises a loss on initial recognition of an onerous group of underlying contracts or on addition of onerous underlying insurance contracts to that group.³⁷² This requirement applies to all reinsurance contracts held and is irrespective of the measurement model used by the underlying contracts.

It is clarified in the Basis of Conclusions that, for this accounting to apply, an entity must enter into the reinsurance contract held before or at the same time as it recognises the onerous underlying insurance contracts. The Board concluded that it would not be appropriate for an entity to recognise a recovery of loss when the entity does not hold a reinsurance contract.³⁷³ This does not preclude the entity from recognising the gain for underlying contracts that are added to the group subsequently, as these contracts are initially recognised after the entity entered into the reinsurance contract held.

The amount of the adjustment to the contractual service margin of a group of reinsurance contracts held and resulting income is determined by multiplying.³⁷⁴

▶ The loss recognised on the underlying contracts

And

The percentage of claims on underlying insurance contracts the entity expects to recover from the group of reinsurance contracts held

An entity should also establish (or adjust) a loss-recovery component of the asset for remaining coverage for a group of reinsurance contracts held depicting the recovery of losses recognised applying the requirements above. The loss-recovery component determines the amounts that are presented in profit or loss as reversals of recoveries of losses from reinsurance contracts held and are, consequently, excluded from the allocation of premiums paid to the reinsurer.³⁷⁵

An entity might include in an onerous group of insurance contracts, both onerous insurance contracts covered by a group of reinsurance contracts held and onerous insurance contracts not covered by the group of reinsurance contracts held. In such cases, the entity must apply a systematic and rational method of allocation to determine the portion of losses recognised on the group of insurance contracts that relates to insurance contracts covered by the group of reinsurance on the determine the determine the portion of losses recognised on the group of reinsurance contracts held.³⁷⁶

IFRS 17 does not require an entity to track insurance contracts at a lower level than the level of the group of insurance contracts. Accordingly, the Board specified that, in these circumstances, an entity applies a systematic and rational method of allocation to determine the portion of losses on a group

³⁷² IFRS 17.66A.

³⁷³ IFRS 17.BC315C.

³⁷⁴ IFRS 17.B119D

³⁷⁵ IFRS 17.66B.

³⁷⁶ IFRS 17.B119E.

of insurance contracts that relates to underlying insurance contracts covered by a reinsurance contract held. Requiring a systematic and rational method of allocation is consistent with other requirements in IFRS 17.³⁷⁷

The loss recovery requirements add complexity to IFRS 17 because they require an entity to track a loss-recovery component. However, the Board concluded that the added complexity was justified given the strong stakeholder support for the information that entities will provide to users of financial statements as a result of the amendment. In addition, the Board noted that the loss-recovery component of a reinsurance contract held is treated similarly to the loss component on insurance contracts issued.³⁷⁸

The following example, based on Example12C in the Illustrative Examples on IFRS 17, shows the application of these requirements at initial measurement.³⁷⁹

Illustration 58 – Initial measurement of a group of reinsurance contracts held that provides coverage for groups of underlying insurance contracts, including an onerous group [Example 12 in the Illustrative Examples to IFRS 17, IE138A-138K]

At the beginning of Year 1, an entity enters into a reinsurance contract that in return for a fixed premium covers 30 per cent of each claim from the groups of underlying insurance contracts. The reinsurance held is the only contract in the group. The underlying insurance contracts are issued at the same time as the entity enters into the reinsurance contract held. For simplicity it is assumed that no contracts will lapse before the end of the coverage period, there are no changes in estimates and all other amounts, including the effect of discounting, the risk adjustment for non-performance risk and the risk of non-performance of the reinsurer are ignored.

Some of the underlying insurance contracts are onerous at initial recognition. Thus, the entity establishes a group comprising the onerous contracts. The remainder of the underlying insurance contracts are expected to be profitable and, in this example, the entity establishes a single group comprising the profitable contracts. The coverage period of the underlying insurance contracts and the reinsurance contract held is three years from the beginning of Year one. Services is provided evenly over the coverage periods.

The entity expects to receive CU1,110 on the underlying insurance contracts immediately after initial recognition. Claims on the underlying insurance contracts are expected to be incurred evenly across the coverage period and are paid immediately after claims are incurred.

The entity measures the group of underlying insurance contracts on initial recognition, as follows:

³⁷⁷ IFRS 17.BC315H.

³⁷⁸ IFRS 17.BC315G.

³⁷⁹ IFRS 17.IE138A 138K.
Illustration 58 – Initial measurement of a group of reinsurance contracts held that provides coverage for groups of underlying insurance contracts, including an onerous group [Example 12 in the Illustrative Examples to IFRS 17, IE138A-138K] (cont'd)

	Profitable group of insurance contracts	Onerous group of insurance contracts	Total
	CU	CU	CU
Estimates of the present value of future cash inflows	900	210	1,110
Estimates of the present value of future cash outflows	(600)	(300)	(900)
Fulfilment cash flows	300	(90)	210
Contractual service margin	(300)	-	(300)
Insurance contract asset/(liability) on initial recognition	-	(90)	(90)
Loss on initial recognition	-	90	90

The entity establishes a group comprising a single reinsurance contract held that provides proportionate coverage. The entity pays a premium of CU315 to the reinsurer immediately after initial recognition. The entity expects to receive recoveries of claims from the reinsurer on the same day that the entity pays claims on the underlying insurance contracts.

Applying IFRS 17, the entity measures the estimates of the present value of the future cash flows for the group of reinsurance contracts held using assumptions consistent with those used to measure the estimates of the present value of the future cash flows for the groups of underlying insurance contracts. Consequently, the estimate of the present value of the future cash inflows is CU270 (recovery of 30 per cent of the estimates of the present value of the future cash outflows for the groups of underlying insurance contracts of CU900).

The entity measures the group of reinsurance contracts held on initial recognition as follows:

Illustration 58 – Initial measurement of a group of reinsurance contracts held that provides coverage for groups of underlying insurance contracts, including an onerous group [Example 12 in the Illustrative Examples to IFRS 17, IE138A-138K] (cont'd)

	Initial recognition
	CU
Estimates of present value of future cash inflows (recoveries) being 900*30%	270
Estimates of present value of future cash outflows (premiums)	(315)
Fulfilment cash flows	(45)
Contractual service margin of the reinsurance contract held (before the loss recovery adjustment)	45
Loss-recovery component (being 90*30%)	27
Contractual service margin of the reinsurance contract held (after the loss-recovery adjustment)	72
Reinsurance contract asset on initial recognition	27
Income on initial recognition	(27)

Applying IFRS 17, the entity adjusts the contractual service margin of the reinsurance contract held and recognises income to reflect the loss recovery. The entity determines the adjustment to the contractual service margin and the income recognised as CU27 (the loss of CU90 recognised for the onerous group of underlying insurance contracts multiplied by 30 per cent, the fixed percentage of claims the entity expects has the right to recover). The contractual service margin of CU45 is adjusted by CU27, resulting in a contractual service margin of CU72, reflecting a net cost on the reinsurance contract held. The reinsurance contract asset of CU27 comprises the fulfilment cash flows of CU45 (net outflows) and a contractual service margin reflecting a net cost of CU72. The entity establishes a loss-recovery component of the asset for remaining coverage of CU27 depicting the recovery of losses recognised.

How we see it

- A question arises about how to account for changes in the loss component of an underlying group of insurance contracts, that are covered by reinsurance held, when changes in the loss component result from noncovered cash flows (i.e., claims and expenses that are not recoverable from reinsurers). IFRS 17 sets out that reversals of a loss-recovery component of a group of reinsurance contracts held that arise from noncovered cash flows should adjust the contractual service margin of the group of reinsurance contracts held. However, IFRS 17 does not, within this context, refer to increases in the loss-recovery component that arise from non-covered cash flows. This appears to indicate that, after initial recognition, a loss-recovery component of a group of reinsurance contracts held is only adjusted for changes in non-covered cash flows when those changes result in a decrease in the loss component on the underlying group of contracts. For subsequent measurement, the loss recovery guidance of IFRS 17 can only result in decreases of the loss component for changes in non-recoverable cash flows, but not increases. The loss-recovery component can subsequently only be increased for changes in cash flows that are recoverable under the terms of the reinsurance contract held.
- This subsequent treatment of the loss-recovery component differs from the way that a loss-recovery component is set up on initial recognition. On initial recognition, an entity can apply the simplifying assumption that the loss-recovery component is determined by multiplying the loss recognised on the underlying insurance contracts by the percentage of claims on the underlying insurance contracts the entity expects to recover from the group of reinsurance contracts held. This initial recognition makes no distinction between cash flows on the underlying group of insurance contracts which are covered by the reinsurance contract and those that are not. Presumably this is because at initial recognition it would be difficult to identify what proportion of a loss on a group of underlying contracts results from covered cash flows and what proportion arises from uncovered cash flows.
- Reinsurance contracts may provide cover across different groups of insurance contracts. For example, a motor reinsurance contract is likely to provide protection for underlying insurance contracts within a portfolio comprising both onerous contracts and those not expected to become onerous. Some reinsurance contracts are written on a "whole account" basis and cover all of an insurer's underlying groups of insurance contracts. IFRS 17 does not provide guidance as to how to measure the reinsurance contract in these circumstances. Consequently, an insurer will have to use judgement in weighting the underlying cash flows from different insurance groups to the reinsurance contract.
- Under the loss recovery requirements of IFRS 17, changes in fulfilment cash flows of a group of reinsurance contracts held that are caused by changes related to future services of onerous groups of underlying insurance contracts recognised immediately in profit or loss, are also recognized in profit or loss (rather than being offset against the contractual service margin of the reinsurance contract held). Insurers will therefore need to identify the extent to which changes in fulfilment cash flows of a group reinsurance contracts held relate to corresponding changes of underlying groups of contracts that have been recognised in

profit or loss. Where an onerous group of insurance contracts includes both onerous contracts covered by the reinsurance contracts held, and onerous contracts not covered by the reinsurance contracts held, this will require a means of allocating the changes in fulfilment cash flows of an onerous group of underlying contracts between them. This could give rise to significant operational complexity. An entity could consider subdividing into further groups of insurance contracts issued and/or groups of reinsurance contracts held in order to facilitate such allocations.

11.4.4. Initial measurement of the effect of the risk of nonperformance

In addition to using consistent assumptions, an entity should make the following modifications in calculating the fulfilment cash flows:

- Estimates of the present value of the future cash flows for the group of reinsurance contracts held must reflect the effect of any risk of nonperformance by the issuer of the reinsurance contract, including the effects of collateral and losses from disputes.³⁸⁰ This is because an entity holding a reinsurance contract faces the risk that the reinsurer may default or may dispute whether a valid claim exists for an insured event.³⁸¹ The estimates of expected losses from non-performance risk are based on expected values over the lifetime of the reinsurance asset.
- The estimate of the risk adjustment for non-financial risk must be determined to represent the amount of risk being transferred by the cedant to the reinsurer.³⁸²

The requirement to reflect the non-performance risk on an expected value basis is similar to the requirement of IFRS 9 to provide for expected credit losses on certain financial instruments. However, IFRS 9 does not apply to rights under a contract within the scope of IFRS 17, such as a receivable due under a reinsurance contract held (see section 2). Consequently, the IFRS 9 credit loss model does not apply. Instead, non-performance risk is reflected on an expected value basis over the estimated lifetime of the insurance contract using the guidance for expected values as part of the fulfilment cash flows (see section 7 above).

Frequently asked questions

Question 11-7: For reinsurance contracts held, is the risk of nonperformance of the reinsurer considered within the estimates of the present value of future cash flows or the risk adjustment for non-financial risk? [TRG meeting May 2018 – Agenda paper no. 7, Log S42]

The TRG agreed with the IASB staff when they noted that the risk adjustment does not include an adjustment for the risk of non-performance. The adjustment should be contained within the estimates of the present value of future cash flows.

³⁸⁰ IFRS 17.63.

³⁸¹ IFRS 17.BC308.

³⁸² IFRS 17.64.

Frequently asked questions (cont'd)

Question 11-8: Non-performance risk of a reinsurer may incorporate different risks such as insolvency risk and the risks related to disputes. Should these risks be identified as financial or non-financial risks? What impact does this determination have on the measurement of the risk adjustment for reinsurance contracts held when determining the risk being transferred applying paragraph 64 of IFRS 17? [TRG meeting April 2019 – Agenda paper no. 2, Log S119]

The IASB staff observed that for reinsurance contracts held, applying paragraph 64 of IFRS 17 rather than paragraph 37 of IFRS 17, an entity determines the risk adjustment for non-financial risk at the amount of the risk being transferred by the policyholder of the group of reinsurance contracts held to the issuer of those contracts. Paragraph 63 of IFRS 17 discusses the estimates of the present value of the future cash flows of a reinsurance contract held and specifically requires that those estimates should include the effect of any risk of non-performance by the issuer of the reinsurance contract including the effects of collateral and losses from disputes. Thus, the risk adjustment for non-financial risk of a reinsurance contract held reflects only the risks that the cedant transfers to the reinsurer. The risk of non-performance by the reinsurer is not a risk transferred to the reinsurer, nor does it reduce the risk transferred to the reinsurer. It is only reflected in the present value of the future cash flows of the reinsurance contract held, similar to the treatment of financial risks. Paragraph 63 of IFRS 17 does not provide specific requirements on how to determine the effect of any risk of non-performance. Paragraph 67 of IFRS 17 requires that changes in the fulfilment cash flows related to the risk of non-performance do not adjust the contractual service margin, therefore an entity recognises them in profit or loss. This treatment is consistent with the accounting treatment for financial risks.

How we see it

IFRS 17 requires insurers to account for, and disclose in the notes to the financial statements, the changes in fulfillment cash flows that result from changes in the risk of non-performance by reinsurers in respect of reinsurance contracts held. IFRS 17 also states that changes in the fulfillment cash flows that result from changes in the risk of nonperformance by the issuer of a reinsurance contract held do not relate to future service and shall not adjust the CSM. Hence, these changes should be recognised in the statement of comprehensive income in the period in which these effects occur. According to IFRS 13, the risk of nonperformance is the risk that an entity will not fulfill its obligation. This risk includes, but may not be limited to, an entity's own credit risk. IFRS 17 requires that an entity shall include in the estimates of the present value of the future cash flows for the group of reinsurance contracts held, the effect of any risk of non-performance by the issuer of the reinsurance contract, including the effects of collateral and losses from disputes. As such, the risks of an entity not fulfilling its obligation could be influenced by different factors (including both the ability to pay and dispute over the amount contractually due). Evaluating what gives rise to the risk of nonperformance involves the application of judgement because it depends on the specific circumstances of the reinsurance arrangement.

Even though the risk of non-performance should not be incorporated in the risk adjustment, changes in fulfilment cash flows that relate to the risk of non-performance will affect the measurement of the risk adjustment for non-financial risk to the extent that the underlying expected cash flows have reduced (e.g., because of insolvency of a reinsurer). This is because the risk inherent in those revised cash flows may have changed. As a result, we would expect the risk adjustment for non-financial risk to be calculated on the expected fulfilment cash flows after the fulfilment cash flows have been adjusted for the effect of non-performance.

11.5. Subsequent measurement of reinsurance contracts held

Instead of applying the subsequent measurement requirements of the general model, an entity must measure the contractual service margin at the end of the reporting period for a group of reinsurance contracts held as follows:³⁸³

Change in the carrying amount of the contractual service margin of a group of reinsurance contracts held in a period			
The carrying amount determined at the start of the reporting period.	X/(X)		
The effect of new contracts added to the group.	X/(X)		
Interest accreted on the carrying amount of the contractual service margin, measured at discount rates determined at the date of initial recognition of a group of contracts using the discount rates as determined by the general model (see 9.3 above).	X/(X)		
Income recognised in profit or loss when an entity offsets a loss on an onerous group of underlying contracts (see 11.4.3 above).	(X)		
Reversals of a loss-recovery component recognised (see 11.4.3 above) to the extent those reversals are not changes in the fulfilment cash flows of the group of reinsurance contracts held.	Х		
Change in fulfilment cash flows measured at the discount rates applying on initial recognition (see 9.3 above) to the extent that the change relates to future service, unless (see 11.5.1 below):	X/(X)		
The change results from a change in fulfilment cash flows allocated to a group of underlying insurance contracts that does not adjust the contractual service margin for the group of underlying insurance contracts			

³⁸³ IFRS 17.66.

Change in the carrying amount of the contractual service margin of a group of reinsurance contracts held in a period				
Or				
The change results from applying the onerous contract requirements to the measurement of a group of underlying insurance contracts using the premium allocation approach.				
The effect of currency exchange differences. X/(X)				
The amount recognised in profit or loss because of services received in the period determined by the allocation of the contractual service margin remaining at the end of the reporting period (before any allocation) over the current and remaining coverage period of the group of reinsurance contracts held (see 11.5.2 below).	(X)/X			
The carrying amount determined at the end of the X/(X) reporting period.				

11.5.1. Changes to the contractual service margin that result from changes in estimates of cash flows

The contractual service margin of a group of insurance contracts issued can never be negative. In contrast, IFRS 17 does not include a limit on the amount by which the contractual service margin of a group of reinsurance contracts held could be adjusted as a result of changes in estimates of cash flows. In the Board's view, the contractual service margin for a group of reinsurance contracts held is different from that for a group of insurance contracts issued – the contractual service margin for the group of reinsurance contracts held depicts the expense the entity incurs when purchasing reinsurance coverage rather than the profit it will make by providing services under the insurance contract. Accordingly, the Board placed no limit on the amount of the adjustment to the contractual service margin for the group of reinsurance contracts held, subject to the amount of premium paid to the reinsurer.³⁸⁴

It is stated in the Basis for Conclusions in IFRS 17 that the Board considered the situation that arises when the underlying group of insurance contracts becomes onerous after initial recognition because of adverse changes in estimates of fulfilment cash flows relating to future service. In such a situation, the entity recognises a loss on the group of underlying insurance contracts (this situation would also apply to the subsequent accounting of underlying direct contracts that were already onerous at their initial recognition). The Board concluded that corresponding changes in cash inflows from a group of reinsurance contracts held should not adjust the contractual service margin of the group of reinsurance contracts held, with the result that the entity recognises no net effect of the loss and gain in the profit or loss for the period. This means that, to the extent that the change in the fulfilment cash flows of the group of

³⁸⁴ IFRS 17.BC314.

underlying contracts is matched with a change in fulfilment cash flows on the group of reinsurance contracts held, there is no net effect on profit or loss.³⁸⁵

These requirements are illustrated by the following example, based on Examples 12A and 12B in IFRS 17.

Illustration 59 – Measurement subsequent to initial recognition of groups of reinsurance contracts held [Example 12A and 12B in the Illustrative Examples to IFRS 17, IE130-138]

An entity enters into a reinsurance contract that, in return for a fixed premium, covers 30% of each claim from the underlying insurance contracts (the entity assumes that it could transfer 30% of non-financial risk from the underlying contracts to the reinsurer). In this example, the effect of discounting, the risk of the reinsurer's non-performance, and other amounts are disregarded for simplicity. Applying the relevant criteria, the entity considers that the group comprises a single contract held.

Immediately before the end of year one, the entity measures the group of underlying insurance contracts and the reinsurance contract held, as follows:

	Insurance contract liability	Reinsurance contract asset
	CUm	CUm
Fulfilment cash flows (before the effect of any change in estimates)	300	(90)
Contractual service margin	100	(25)
Insurance contract liability / (reinsurance contract asset) immediately before the end of year one	400	(115)

In this example, the difference between the contractual service margin for the reinsurance contract held of CU25m and 30% of the underlying group of insurance contracts of CU30m (30% X CU100) arises because of a different pricing policy between the underlying group of insurance contracts and the reinsurance contract held.

Example A

At the end of year one, the entity revises its estimates of the fulfilment cash flows of the underlying group of contracts. The entity estimates there is an increase in the fulfilment cash flows of the underlying contracts of CU50m and a decrease in the contractual service margin by the same amount (the group of underlying insurance contracts is not onerous).

The entity increases the fulfilment cash flows of the reinsurance contract held by 30 per cent of the change in fulfilment cash flows of the underlying group of insurance contracts (\$15m = 30% of \$50m).

Applying paragraph 66, the entity adjusts the contractual service margin of the reinsurance contract held by the whole amount of the change in the fulfilment cash flows of this reinsurance contract held of CU15 m from

³⁸⁵ IFRS 17.BC315.

Illustration 59 - Measurement subsequent to initial recognition of groups of reinsurance contracts held [Example 12A and 12B in the Illustrative Examples to IFRS 17, IE130-138] (cont'd)

CU(25) m to CU(10) m. This is because the whole change in the fulfilment cash flows allocated to the group of underlying insurance contracts adjusts the contractual service margin of those underlying insurance contracts.

Therefore, at the end of year 1, the entity measures the insurance contracts liability and the reinsurance contract asset, as follows:

	Insurance contract liability	Reinsurance contract asset
	CUm	CUm
Fulfilment cash flows (including the effect of any change in estimates)	350	(105)
Contractual service margin	50	(10)
Insurance contract liability / (reinsurance contract asset) immediately before the end of year 1	400	(115)

These changes do not affect estimates of profit and loss as all changes in the fulfilment cash flows go to the contractual service margin.

Example B

At the end of year one, the entity revises its estimates of the fulfilment cash flows of the underlying group of contracts. The entity estimates that there is an increase in the fulfilment cash flows of the underlying group of insurance contracts of CU160 m. This change makes the underlying group of insurance contracts onerous and the entity decreases the contractual service margin by CU100 m to zero and recognises the remaining CU60 m as a loss in profit or loss.

The entity increases the fulfilment cash flows of the reinsurance contract held by CU48 m which equals 30 per cent of the fulfilment cash flows of the underlying group of insurance contracts (CU48 m=30% of CU160 m).

Applying paragraph 66, the entity adjusts the contractual service margin of the reinsurance contract held for the change in fulfilment cash flows that relate to future services to the extent this change results from a change in the fulfilment cash flows of the group of underlying insurance contracts that adjusts the contractual service margin for that group.

Consequently, the change in the fulfilment cash flows of the reinsurance contract held of CU48 m are recognised as follows by:

Adjusting the contractual service margin of the reinsurance contract held for CU30 m of the change in the fulfilment cash flows. The CU30 m is equivalent to the change in the fulfilment cash flows that adjusts the contractual service margin of the underlying contracts of CU100 m (CU30 m = 30% x CU100 m). Consequently, the contractual service margin of the reinsurance contract held of CU5 m equals the contractual service margin on initial recognition of CU25 m adjusted for the part of the change Illustration 59 – Measurement subsequent to initial recognition of groups of reinsurance contracts held [Example 12A and 12B in the Illustrative Examples to IFRS 17, IE130-138] (cont'd)

in the fulfilment cash flows of CU30 m (CU5 m = CU(25) m + CU30 m). This represents a contractual service margin 'asset'.

 Recognising the remaining change in the fulfilment cash flows of the reinsurance contract held, CU18 m (i.e. CU48 m - CU30 m) immediately in profit or loss.

Therefore, at the end of year one, using these alternative estimates, the entity measures the insurance contract liability and the reinsurance contract asset, as follows:

	Insurance contract liability	Reinsurance contract asset
	CUm	CUm
Fulfilment cash flows (including the effect of any change in estimates)	460	(138)
Contractual service margin	-	5
Insurance contract liability / (reinsurance contract asset) at the end of year 1	460	(133)
The effect on profit or loss will be:	-	
Profit (loss) at the end of year one	(60)	18

11.5.1.A. Subsequent measurement of non-performance risk

Any changes in expected credit losses are economic events that should be reflected as gains and losses in profit or loss when they occur. To this end, IFRS 17 prohibits changes in fulfilment cash flows that relate to the risk of non-performance adjusting the contractual service margin. In the Board's view, differences in expected credit losses do not relate to future service.³⁸⁶ Accordingly, this results in consistent accounting for expected credit losses between reinsurance contracts held and purchased, and originated credit-impaired financial assets accounted for in accordance with IFRS 9 (which does not apply to rights and obligations arising under a contract within the scope of IFRS 17 such as a receivable due under a reinsurance contract held - see 2.3 above).³⁸⁷

As noted at 11.4.4 above, the risk adjustment for non-financial risk does not include an adjustment for the risk of non-performance (which is already contained within the estimates of the present value of future cash flows). However, changes in fulfilment cash flows that relate to the risk of nonperformance will affect the risk adjustment for non-financial risk to the extent

 ³⁸⁶ IFRS 17.67.
³⁸⁷ IFRS 17.BC309.

that the underlying expected cash flows have reduced because the risk inherent in those revised cash flows has changed.

Illustration 60 – Changes in reinsurance contract held balances caused by non-performance

An insurer holds a 100% quota share reinsurance contract. Assume the group of reinsurance contracts held consists of this single contract. Further assume that the present value of future cash inflows of the reinsurance contract held amounts to CU73, that consists of CU75, less CU2 as an estimate of non-performance. The risk adjustment for non-financial risk of the reinsurance contract held amounts to CU10. As a result, the reinsurance contract asset amounts to CU83.

As a result of a credit event, the reinsurer becomes insolvent and the insurer now estimates that the present value of future cash flows amounts to CU15, consisting of CU75, less CU60 as an estimate of non-performance.

The insurer is an ordinary creditor of the reinsurer and its best estimate is that it will receive only 20% in any CU of the 'gross' claim of CU75. Assume that under the entity's method for estimating the risk adjustment, an expected cash flow of CU15 would result in a risk adjustment for non-financial risk of 2.

The risk adjustment for non-financial risk following the credit event amounts to CU2 as the insurer should calculate the risk adjustment for non-financial risk using the fulfilment cash flows it expects, which in this case would be the net cash flows of CU15. As a result, the reinsurance contract asset now amounts to CU17.

11.5.1.B. Subsequent measurement of a loss-recovery component

As discussed at 11.4.3 above, at initial recognition, an entity must establish (or adjust) a loss-recovery component of the asset for remaining coverage for a group of reinsurance contracts held depicting the recovery of losses recognised. This loss-recovery component should be accounted for in a manner consistent with the loss component of the group of underlying insurance contracts issued. As such, after the entity has established a loss component, it should adjust the loss-recovery component to reflect changes in the loss component of an onerous group of underlying insurance contracts.

The carrying amount of the loss-recovery component must not exceed the portion of the carrying amount of the loss component of the onerous group of underlying insurance contracts that the entity expects to recover from the group of reinsurance contracts held.³⁸⁸

A loss-recovery component reverses, consistent with reversal of the loss component of underlying groups of contracts issued, even when those reversals are not changes in the fulfilment cash flows of the group of reinsurance contracts held. Such reversals adjust the contractual service margin.³⁸⁹ For example, a loss-recovery component might be reversed by a change in

³⁸⁸ IFRS 17.B119F.

³⁸⁹ IFRS 17.66(bb).

fulfilment cash flows in the underlying group of insurance contracts that has no corresponding change in fulfilment cash flows in the reinsurance contract held (e.g., because of a favourable change in expense assumptions not covered under the reinsurance agreement).

The following example based on Example 12C in the Illustrative Examples on IFRS 17 show how this operates in practice.

Illustration 61 – Measurement subsequent to initial recognition of groups of reinsurance contracts held [Example 12C in the Illustrative Examples to IFRS 17, IE138L-138M]

Assuming the same fact pattern as Illustration 59 above.

At the end of Year one, the entity measures the insurance contract liability and the reinsurance contract asset as follows:

	Insurance liabi	Reinsurance contract asset	
	Profitable group of insurance contracts	Onerous group of insurance contracts	
	CU m	CU m	CU m
Estimates of future cash inflows (recoveries)	-	-	(180)
Estimates of present value of future cash outflows (claims)	400	200	-
Contractual service margin	200	-	(48)
Insurance contract liability / (reinsurance contract asset) immediately before the end of year one	600	200	(228)

Applying paragraphs 66(e) and B119 of IFRS 17, the entity determines the amount of the contractual service margin recognised in profit or loss for the service received in Year one as CU24 m, which is calculated by dividing the contractual service margin on initial recognition of CU72 m by the coverage period of three years. Consequently, the contractual service margin of the reinsurance contract held at the end of Year one of CU48 m equals the contractual service margin on initial recognition of CU72 m minus CU24 m.

At the end of Year 2, the entity revises its estimates of the remaining fulfilment cash outflows of the groups of underlying insurance contracts. The entity estimates that the fulfilment cash flows of the groups of underlying insurance contracts increase by 10 per cent, from future cash outflows of CU300 m (see Illustration 59) to future cash outflows of CU330 m (see below). Consequently, the entity estimates the fulfilment cash flows of the reinsurance contract held also increase from future cash inflows of CU90 m to future cash inflows of CU99 m.

Illustration 61 - Measurement subsequent to initial recognition of groups of reinsurance contracts held [Example 12C in the Illustrative Examples to IFRS 17, IE138L-138M] (cont'd)

At the end of Year two, the entity measures the insurance contract liability and the reinsurance contract asset, as follows:

	Insurance liabi	Reinsurance contract asset	
	Profitable group of insurance contracts	Onerous group of insurance contracts	
	CU m	CU m	CU m
Estimates of future cash inflows (recoveries)	-	-	(99)
Estimates of present value of future cash outflows (claims)	220	110	-
Contractual service margin	90	-	(21)
Insurance contract liability / (reinsurance contract asset)	310	110	(120)
Recognition of loss and recovery of loss		(10)	3

As a result of the changes in the estimates of the remaining fulfilment cash flows:

- The entity increases the expected remaining cash outflows of the groups of underlying insurance contracts by 10 per cent for each group (CU30 m in total) and increases the expected remaining cash inflows of the reinsurance contract held by 10 per cent of the expected recoveries of CU90 m (CU9 m).
- Applying paragraph 44(c) of IFRS 17, the entity adjusts the carrying amount of the contractual service margin of the profitable group of underlying insurance contracts of CU200 m by CU20 m for the changes in fulfilment cash flows relating to future service. Applying paragraph 44(e), the entity also adjusts the carrying amount of the contractual service margin by CU90 m for the amount recognised as insurance revenue ((CU200 m - CU20 m = CU180 m) ÷ 2). The resulting contractual service margin at the end of year 2 is CU90 m (CU200 m - CU20 m - CU90 m).
- Applying paragraph 48 of IFRS 17, the entity recognises in profit or loss an amount of CU10 for the changes in the fulfilment cash flows relating to future services of the onerous group of underlying insurance contracts.

Illustration 61 - Measurement subsequent to initial recognition of groups of reinsurance contracts held [Example 12C in the Illustrative Examples to IFRS 17, IE138L-138M] (cont'd)

- Applying paragraph 66(c)(i) of IFRS 17, the entity adjusts the contractual service margin of the reinsurance contract held for the change in fulfilment cash flows that relate to future service unless the change results from a change in fulfilment cash flows allocated to a group of underlying insurance contracts that does not adjust the contractual service margin for that group. Consequently, the entity recognises the change in the fulfilment cash flows of the reinsurance contract held of CU9 m by:
- Recognising immediately in profit or loss CU3 of the change in the fulfilment cash flows of the reinsurance contract held (30 per cent of the CU10 m change in the fulfilment cash flows of the onerous group of underlying insurance contracts that does not adjust the contractual service margin of those contracts); and
- Adjusting the contractual service margin of the reinsurance contract held by CU6 m of the change in the fulfilment cash flows (CU9 m - CU3 m).
- Consequently, the contractual service margin of the reinsurance contract held of CU(21)m equals the contractual service margin at the end of Year one of CU(48 m) adjusted for CU6 m and for CU21 m of the contractual service margin recognised for the service received in Year 2 (CU(21)m = (CU(48)m + CU6 m) ÷ 2).

As discussed at 11.4.3 above, an entity might include in an onerous group of insurance contracts both onerous insurance contracts covered by a group of reinsurance contracts held and onerous insurance contracts not covered by the group of reinsurance contracts held. To adjust the contractual service margin for changes in fulfilment cash flows allocated to a group of underlying insurance contracts that do not adjust the contractual service margin for that group of underlying insurance contracts, an entity should apply a systematic and rational method of allocation to determine the portion of losses recognised on the group of insurance contracts that relate to insurance contracts covered by the group of reinsurance contracts held.³⁹⁰

11.5.2. Allocation of the contractual service margin to profit or loss

The principles for release of the contractual service margin for reinsurance contracts held follows the same principles as for insurance and reinsurance contracts issued, i.e., the contractual service margin is released to revenue as the reinsurer renders service. For a reinsurance contract held, the period that the reinsurer renders service is the coverage period of the reinsurance contract which includes both the period of insurance coverage as well as the period of any investment return service.

³⁹⁰ IFRS 17.B119E.

Frequently asked questions

Question 11-10: For reinsurance contracts held, are coverage units determined based on the services provided by the reinsurer, or the coverage units of the underlying insurance contracts? [TRG meeting, May 2018 – Agenda paper no. 7, Log S41]

Applying paragraph B119 of IFRS 17, the coverage units of a group of insurance contracts are determined based on the quantity of coverage provided by the contracts in that group. For a group of reinsurance contracts held, this is the coverage received by the insurer from the reinsurer under those reinsurance contracts held, and not the coverage provided by the insurer to its policyholders through the underlying insurance contracts. When determining the quantity of benefits received from a reinsurance contract held, an entity may consider relevant facts and circumstances related to the underlying insurance contracts.

See 9.9.4 above for an example of determining the quantity of benefits for identifying coverage units in proportional reinsurance coverage

Illustration 62 – Coverage period for proportional reinsurance treaty that protects an insurer for contracts it issues in a year

An insurer holds a proportional reinsurance treaty that protects it for claims arising from underlying insurance contracts it issues in a year. Each of the underlying insurance contracts has a coverage period of one year. However, the reinsurance treaty provides coverage for claim events that can occur in a period of up to two years. Consequently, the coverage period for the reinsurance contract held is the two-year period.

11.5.2.A. Retroactive reinsurance

For retroactive reinsurance contracts held, the coverage period of the underlying insurance contracts may have expired prior to the inception of the reinsurance contract held. In respect of these contracts, the coverage is provided against an adverse development of an event that has already occurred.³⁹¹ This means that the contractual service margin should be released over the expected settlement period of the claims of the underlying insurance contracts (since that is, in effect, the coverage period for the reinsurance contract).

Since incurred claims are treated as a liability for incurred claims on the underlying direct/assumed side, but as part of the liability for remaining coverage on the reinsurance held side, the question arises as to whether this creates an asymmetry in the recognition of changes in claims between the direct contract issued (relating to past service) and the reinsurance contract held. There should be no asymmetry because paragraph 66 of IFRS 17 (see 11.5.1 above) indicates that the contractual service of reinsurance contracts held is not adjusted by the change that results from a change in fulfilment cash flows allocated to a group of underlying insurance contracts that does not

³⁹¹ IFRS 17.B5.

adjust the contractual service margin for the group of underlying insurance contracts. These fulfilment cash flows include the liability for incurred claims, as changes in the liability for incurred claims do not adjust the contractual service margin for the underlying contracts as there is no contractual service margin on the liability for incurred claims. Accordingly, any change in the fulfilment cashflows of the reinsurance contract held due to the changes of the liability for incurred claims of the underlying contracts will impact profit and loss and not the contractual service margin of the reinsurance contract held. This is illustrated by the following example:

Illustration 63 – Treatment of changes in reinsurance recoveries arising from past events

Company A (the cedant) has a liability for incurred claims of CU100. It decides to enter into a reinsurance contract under which it cedes 50% of the liability for incurred claims.

The cedant pays a reinsurance premium of CU55 to the reinsurer at inception and cedes an amount of CU50 (i.e., 50%) of its liability for incurred claims. This results in a net cost of reinsurance of CU5 at initial recognition. The net cost of CU5 goes immediately through profit and loss following paragraph 65A of IFRS 17 (net cost of purchasing reinsurance coverage recognised as an expense).

In Year one, the liability for incurred claims of the underlying direct contracts increases from CU100 to CU115. As a consequence, the share of liability for incurred claims ceded to the reinsurer increases by CU7.5 (50% of CU15) and implies a favourable change (increase) in the asset for remaining coverage of the reinsurance contract held of \$7.5.

The favourable change in the asset for remaining coverage of \$7.5 should be credited direct to profit or loss to match the treatment for the change of the underlying liability for incurred claims and not to the contractual service margin. This accounting (i.e., direct to profit or loss) should be the same if the deviation was unfavourable.

11.6. Premium allocation approach for reinsurance contracts held

An entity may use the premium allocation approach (see section 10 above), adapted

to reflect the features of reinsurance contracts held that differ from insurance contracts issued, for example, the generation of expenses or a reduction in expenses rather than revenue, to simplify the measurement of a group of reinsurance contracts held if, at the inception of the group:³⁹²

The entity reasonably expects that the resulting measurement would not differ materially from the result of applying the requirements in the general model for reinsurance contracts held, as discussed above

Or

³⁹² IFRS 17.69.

The coverage period of each contract in the group of reinsurance contracts held (including coverage from all premiums within the contract boundary determined at that date applying the definition in the general model) is one year or less.

Assessment of eligibility for groups of reinsurance contracts held to be able to use the premium allocation approach is independent of whether the entity applies the premium allocation approach to the underlying groups of insurance contracts issued by an entity. Therefore, for example, reinsurance contracts which are written on a twelve months risks attaching basis (i.e. the underlying insurance contracts subject to the reinsurance contract incept over a twelve month period) will have a contract boundary of up to two years if each of the underlying insurance contracts have a coverage period of one year. The two year contract boundary means that those reinsurance contracts held will not meet the twelve month criterion for use of the premium allocation approach and would have to qualify for the premium allocation approach on the basis that the resulting measurement would not differ materially from the result of applying the requirements in the general model. As a consequence, a mismatch in measurement models may arise if the underlying contracts are accounted for under the premium allocation approach.

IFRS 17 confirms that an entity cannot meet the first condition above if, at the inception of the group, an entity expects significant variability in the fulfilment cash flows that would affect the measurement of the asset for remaining coverage during the period before a claim is incurred. Variability in the fulfilment cash flows increases with, for example:³⁹³

- The extent of future cash flows relating to any derivatives embedded in the contracts
- The length of the coverage period of the group of reinsurance contracts held

When a group of reinsurance contracts held is accounted for applying the premium allocation approach and an entity has a group of underlying insurance contracts that are onerous on initial recognition (see 11.4.3 above), the carrying amount of the asset for remaining coverage is adjusted instead of the contractual service margin.³⁹⁴

 ³⁹³ IFRS 17.70.
³⁹⁴ IFRS 17.70A.

How we see it

- A one-year 'risks attaching' reinsurance contract should be treated as a contract with a coverage period of more than one year, because the reinsurance coverage is provided for all direct contracts written by a cedant in that underwriting year. A one-year direct contract issued on the last day of the underwriting year will have a coverage period that extends until the end of the next year. Therefore, the reinsurer is providing coverage to the cedant for up to two years.
- The two-year coverage period means that those reinsurance contracts held will not meet the 'one year or less' criterion for use of the premium allocation approach and would have to qualify for the premium allocation approach on the basis that the resulting measurement would not differ materially from the result of applying the requirements in the general model. As a consequence, a mismatch in measurement models may arise if the underlying contracts are accounted for under the premium allocation approach while the reinsurance contract held has to apply the general model.
- IFRS 17 provides for the recognition of a reinsurance loss-recovery component at initial recognition of a group of onerous underlying insurance contracts when the group of reinsurance contracts held is accounted for under the premium allocation approach. However, the standard does not include guidance on the subsequent treatment of a loss-recovery component when the group of reinsurance contracts held is accounted for under the premium allocation approach. Following the requirements for the loss-recovery component under the general model, the carrying amount of the loss-recovery component shall not exceed the portion of the carrying amount of the loss component of the onerous group of underlying insurance contracts that an entity expects to recover from the group of reinsurance contracts held. Therefore, the lossrecovery component should be nil if the loss component of the onerous group of underlying insurance contracts is nil. On this basis, the lossrecovery component recognised at initial recognition should be reduced to nil in line with reductions in the onerous group of underlying insurance contracts.
- Furthermore, analogising from the requirements for the loss-recovery component under the general model, the standard would not preclude an entity from subsequently recording or increasing a loss-recovery component for changes in the loss component of an onerous group of underlying contracts when a group of reinsurance contracts held is accounted for under the premium allocation approach. In doing so, any entity would need to determine the loss-recovery component in way that is adapted to the specific mechanics of the premium allocation approach but consistent with the principles of the loss-recovery component under the general model.

11.7. Reinsurance contracts held and the variable fee approach

An entity is not permitted to use the variable fee approach for reinsurance contracts held. The variable fee approach also cannot be applied to reinsurance contracts issued.³⁹⁵ Therefore, this will cause an accounting mismatch when an entity has reinsured contracts subject to the variable fee approach discussed at 12.3 below. It is stated in the Basis for Conclusions that the IASB considers that the entity and the reinsurer do not share in the returns on underlying items and, as such, the criteria for the variable fee approach are not met, even if the underlying insurance contracts issued are insurance contracts with direct participation features. The IASB decided not to modify the scope of the variable fee approach to include reinsurance contracts held as it was considered that such an approach would be inconsistent with the Board's view that a reinsurance contract held should be accounted for separately from the underlying contracts issued.³⁹⁶

 ³⁹⁵ IFRS 17.B109.
³⁹⁶ [IFRS 17.BC248.

12.Measurement of contracts with participation features

Many entities issue participating contracts (referred to in the standard as contracts with participation features), that is, to say, contracts in which both the policyholder and the entity benefit from the financial return on the premiums paid by sharing the performance of the underlying items over the contract period. Participating contracts can include cash flows with different characteristics, for example:

- Cash flows that do not vary with returns from underlying items, e.g., death benefits and financial guarantees
- Cash flows that vary with returns from underlying items either via a contractual link to the returns on underlying items or through an entity's right to exercise discretion in determining payments to policyholders

Insurance entities in many countries have issued contracts with participation features. An example of an insurance contract with a participation feature is a contract with a death cover in which the policyholder pays annual premiums into an account held by the insurer and receives the higher of a specified death benefit or the account balance (less fees), the return on which is based on the return generated by specified investments. Participating contracts may also contain discretionary participation features. In some countries, insurance companies must return to the policyholders at least a specified proportion of the investment profits on certain contracts but may give more. In other countries, bonuses are added to the policyholder account at the discretion of the insurer. In a third example, insurance companies distribute realised investment gains to the policyholder, but the entities have discretion over the timing of realising the gains. These gains are normally based on the investment return generated by the underlying assets but sometimes include allowance for profits made on other contracts.

For measurement and presentation purposes, IFRS 17 does not distinguish between those participating insurance contracts that have discretionary features and those insurance contracts which do not have discretionary features. This is a change from IFRS 4 which had separate requirements for insurance contracts with discretionary participating features.

IFRS 17 includes:

- A mandatory adaptation to the general model (the variable fee approach) for insurance contracts that include direct participation features (see 12.3 below). In addition, within the variable fee approach, contracts with certain features are permitted to use a different method to calculate the insurance finance income or expenses through profit or loss when insurance finance income or expenses is disaggregated between profit or loss and other comprehensive income (see 15.3 below)
- Specific requirements within the general model for investment contracts with discretionary participation features (see 12.4 below)

Insurance contracts without direct participation features are not permitted to be accounted for under the variable fee approach, even if such contracts

contain participation features (sometimes referred to as indirect participating contracts). For example, an insurance contract where the profit sharing is not based on a share of a clearly identified pool of underlying items. Consequently, there will be a difference between the recognition of insurance revenue for insurance contracts without direct participation features but that have some asset dependent cash flows and for insurance contracts with direct participation features because different discount rates should be used for re-measuring the contractual service margin (see 9.3 above).

Contracts with participation features, including those contracts that meet the criteria for the variable fee approach, are not excluded from applying the premium allocation approach, but IFRS 17 appears to assume that they will typically not meet the eligibility criteria (as the coverage period may be significantly in excess of one year).

The following diagram compares accounting for direct participating contracts to other insurance contracts (assuming the premium allocation approach is not applied).



Reinsurance contracts issued and held cannot be insurance contracts with direct participation features for the purposes of IFRS 17. (see 11.7 above).³⁹⁷

Many participation contracts also contain an element of discretion which means that the entity can choose whether to pay additional benefits to policyholders. However, contracts without participation features may also contain an element of discretion. As discussed at 9.2 above, the expected cash outflows of an insurance contract should include outflows over which the entity has discretion. IFRS 4 permitted the discretionary component of an insurance contract with participation features to be classified in its entirety as either a liability or as equity.³⁹⁸ As a result, under IFRS 4, many insurers classified the entire contract (including amounts potentially due to shareholders) as a liability. This treatment is not available under IFRS 17. Under IFRS 17, entities must make a best estimate of the liability due to policyholders (both current and future) under the contracts and amounts attributable to shareholders are part of shareholders' equity.

³⁹⁷ IFRS 17.B109.

³⁹⁸ IFRS 4.34(b).

The following are two examples of contracts with a participation features:

Illustration 64 – Unitised with-profits policy

Premiums paid by the policyholder are used to purchase units in a 'withprofits' fund at the current unit price. The insurer guarantees that each unit added to the fund will have a minimum value which is the bid price of the unit. This is the guaranteed amount. In addition, the insurer may add two types of bonuses to the with-profits units. These are a regular bonus, which may be added daily as a permanent increase to the guaranteed amount, and a final bonus that may be added on top of those guaranteed amounts when the withprofits units are cashed in. Levels of regular and final bonuses are adjusted twice per year. Both regular and final bonuses are discretionary amounts and are generally set based on expected future returns generated by the funds.

Illustration 65 - Participation policy with minimum interest rates

An insurance contract provides that the insurer must annually credit each policyholder's 'account' with a minimum interest rate (3%). This is the guaranteed amount. The insurer then has discretion regarding whether and what amount of the remaining undistributed realised investment returns from the assets backing the participating policies are distributed to policyholders in addition to the minimum. The contract states that the insurer's shareholders are only entitled to share up to 10% in the underlying investment results associated with the participating policies. As that entitlement is up to 10%, the insurer can decide to credit the policyholders with more than the minimum interest rate of 3% is credited to the policyholder it becomes a guaranteed liability.

How we see it

- Determining how to faithfully represent the complex features of some participating contracts was one of the greatest challenges the IASB faced in finalising IFRS 17.
- It is important to note that the differences between the variable fee approach for direct participation contracts and the general model applied to all other contracts exist for subsequent measurement only. As the requirements for initial measurement are the same for both models, any differences in measurement on initial recognition between contracts would be the result of differences in the terms and conditions of those contracts, but not the application of the two different measurement models.

12.1. Contracts with cash flows that affect or are affected by cash flows to policyholders of other contracts (mutualisation)

Entities should consider whether the cash flows of insurance contracts in one group affect the cash flows to policyholders of contracts in another group. In practice, this effect is often referred to as "mutualisation", even though this term is not defined in IFRS 17. The standard uses the term 'risk sharing'. The economic effect of risk sharing is that a large population of policyholders effectively act together as a loss-absorbing 'buffer' when an adverse event occurs. The insurer itself incurs a loss only if the loss-absorbing capacity of the large population of policyholders is exhausted (i.e., the insurer, and ultimately its shareholders, act as risk-taker of last resort). As such, mutualised contracts result in policyholders subordinating their claims or cash flows to those of other policyholders, thereby reducing the direct exposure of the entity to a collective risk.

IFRS 17 observes that some insurance contracts affect the cash flows to policyholders of other contracts by requiring: $^{\rm 399}$

- The policyholder to share the returns on some specified pool of underlying items, and
- ► Either:
 - The policyholder to bear a reduction in their share of the returns on the underlying items because of payments to policyholders of other contracts that share in that pool, including payments arising under guarantees made to policyholders of those other contracts
 - Or
 - Policyholders of other contracts bear a reduction in their share of returns on the underlying items because of payments to the policyholder, including payments arising from guarantees made to the policyholder

Sometimes, such contracts will affect the cash flows to policyholders of contracts in other groups. The fulfilment cash flows of each group reflect the extent to which the contracts in the group cause the entity to be affected by expected cash flows, whether to policyholders in that group or to policyholders in another group. Hence, the fulfilment cash flows for a group:⁴⁰⁰

- Include payments arising from the terms of existing contracts to policyholders of contracts in other groups, regardless of whether those payments are expected to be made to current or future policyholders
- Exclude payments to policyholders in the group that have been included in the fulfilment cash flows of another group

The reference to future policyholders is necessary because sometimes the terms of an existing contract are such that the entity is obliged to pay to policyholders amounts based on underlying items, but with discretion over the timing of the payments. That means that some of the amounts based on

³⁹⁹ IFRS 17.B67.

⁴⁰⁰ IFRS 17.B68.

underlying items may be paid to policyholders of contracts that will be issued in the future that share in the returns on the same underlying items, rather than to existing policyholders. From the entity's perspective, the terms of the existing contract require it to pay the amounts, even though it does not yet know when or to whom it will make the payments.⁴⁰¹

For example, to the extent that payments to policyholders in one group are reduced from a share in the returns on underlying items of CU350 to CU250 because of payments of a guaranteed amount to policyholders in another group, the fulfilment cash flows of the first group would include the payments of CU100 (i.e., would be CU350) and the fulfilment cash flows of the second group would exclude CU100 of the guaranteed amount.⁴⁰²

Illustration 66 - Risk sharing and guarantees

An insurer has issued participating contracts to two policyholders, A and B, that share in the same pool of underlying assets. The insurer has discretion as to how to share the returns of the underlying assets, but is bound by the minimum return guarantee in each individual contract. The terms of the contracts are the same, except that A's minimum return guarantee is 10% and B's is 5%. The pay-out of the returns to policyholder A and B are interdependent as both policyholders share in the same pool of underlying assets.

Assume the actual return from the underlying items is 8%. For A, the 8% of actual return from the underlying items is less than the minimum return guarantee of 10%. The opposite is true for B. Based on the contractual terms for both policyholders, A receives 10% (minimum return guarantee), and B receives the residual return of 6% (8% less 2% additional return paid to A). Thus, the amount paid to B is reduced in order to satisfy the minimum return promised to A, i.e., there is interdependency between the two pay-outs.

The insurer does not have to pay the difference between the actual returns and the minimum return guarantee to A. So, policyholder B absorbs a loss (or rather, misses out on an opportunity gain) to the benefit of the shareholders of the insurer. However, the insurer would need to pay where the return from the underlying assets is insufficient to pay the minimum return guarantee of both policyholders. In this case, if the return is less than 7.5%, B would be unable to absorb the additional losses and the insurer would need to step in.

Different practical approaches can be used to determine the fulfilment cash flows of groups of contracts that affect or are affected by cash flows to policyholders of contracts in other groups. In some cases, an entity might be able to identify the change in the underlying items and resulting change in the cash flows only at a higher level of aggregation than the groups. In such cases, the entity should allocate the effect of the change in the underlying items to each group on a systematic and rational basis.⁴⁰³

After all insurance contract services have been provided to the contracts in a group, the fulfilment cash flows may still include payments expected to be made to current policyholders in other groups or future policyholders. An entity is not

 ⁴⁰¹ IFRS 17.BC172.
⁴⁰² IFRS 17.B69.

⁴⁰³ IFRS 17.B70.

required to continue to allocate such fulfilment cash flows to specific groups, but can, instead, recognise and measure a liability for such fulfilment cash flows arising from all groups.⁴⁰⁴

The Board considered whether to provide specific guidance on amounts that have accumulated over many decades in participating funds and whose 'ownership' may not be attributable definitively between shareholders and policyholders. It concluded that it would not. In principle, IFRS 17 requires an entity to estimate the cash flows in each scenario. If that requires difficult judgements or involves unusual levels of uncertainty, an entity would consider those matters in deciding what disclosures it must provide to satisfy the disclosure objective in IFRS 17 (see 16 below).⁴⁰⁵

The Board also considered whether prohibiting groups from including contracts issued more than one year apart would create an artificial divide for contracts with cash flows that affect, or are affected by, cash flows to policyholders in another group. The Board acknowledged that, for contracts that fully share risks, the groups together will give the same results as a single combined risksharing portfolio and therefore considered whether IFRS 17 should give an exception to the requirement to restrict groups to include only contracts issued within one year. However, the Board concluded that setting the boundary for such an exception would add complexity to IFRS 17 and create the risk that the boundary would not be robust or appropriate in all circumstances. Nonetheless, the Board noted that the requirements specify the amounts to be reported, not the methodology to be used to arrive at those amounts. Therefore, it may not be necessary for an entity to restrict groups in this way to achieve the same accounting outcome in some circumstances.⁴⁰⁶ Further detail about IFRS 17's requirements for annual cohorts and inter-generational sharing of risk is contained at 6.2.2.A above.

Frequently asked questions

Question 12-1: For annual groups of contracts that all share in the return of a specified pool of underlying items, with some of the return contractually passing from one group of policyholders to another, in what circumstances would measuring the contractual service margin at a higher level than an annual cohort level, such as a portfolio level, achieve the same accounting outcome as measuring the contractual service margin at an annual cohort level applying paragraph 22 of IFRS 17? [TRG meeting September 2018 – Agenda paper no. 10, Log S74]

The TRG members discussed an IASB staff paper which considered a submission about annual groups of contracts which all share in the return on a specified pool of underlying items with some of the return contractually passing from one group of policyholders to another. The question asked in what circumstances measuring the contractual service margin at a higher level than an annual cohort level, such as a portfolio level, would achieve the same accounting outcome as measuring the contractual service margin at an annual cohort level. The TRG members observed that:

 ⁴⁰⁴ IFRS 17.B71.
⁴⁰⁵ IFRS 17.BC170.
⁴⁰⁶ IFRS 17.BC138

Frequently asked questions (cont'd)

- When a specified pool of underlying items consists of insurance contracts issued to the policyholders that share in the returns of that pool, the criteria for mutualisation are met regardless of whether the policyholders' share is 100% of the return of the pool of underlying items or only part of the pool of underlying items.
- The criteria for mutualisation are also met when a specified pool of underlying items do not include the insurance contracts issued to those policyholders (for example, where underlying items are financial assets), if the contracts require policyholders to bear a reduction in their share of the returns on the underlying items because of payments to policyholders of other contracts that share in that pool.
- For contracts that share in 100% of the return of a pool of underlying items consisting of insurance contracts issued to those policyholders, the contractual service margin will be nil. Therefore, measuring the contractual service margin at a higher level than the annual cohort level, such as a portfolio level, would achieve the same accounting outcome as measuring the contractual service margin at an annual cohort level
- Conversely when contracts share to a lesser extent in the return on a pool of underlying items consisting of insurance contracts issued to those policyholders, an entity could be affected by the expected cash flows of each contract issued. Therefore, the contractual service margin of the groups of contracts (at annual cohort level) may differ from the contractual service margin measured at a higher level, such as a portfolio level. To assess whether measuring the contractual service margin at a higher level would achieve the same accounting outcome as measuring the contractual service margin at an annual cohort level, an entity would need to determine what the effect would be (i.e., the accounting outcome would need to be the same in all circumstances, regardless of how assumptions and experience develop over the life of the contract).

However, TRG members expressed concern that, in practice, cash flows would be determined at a higher level of measurement than in the examples provided in the IASB staff paper and then the entity would have to allocate the effect of the change in the underlying items to each group on a systematic and rational basis.

How we see it

- Mutualisation only applies in the specific circumstances where policyholders are contractually required to share with policyholders of other contracts the returns on the same specified pool of underlying items. Cash flows to policyholders of contracts without participation features will typically be independent of amounts paid to other contracts. For example, holders of motor insurance contracts are generally not affected by amounts paid to holders of other motor insurance contracts issued by the same entity.
- The standard does not limit the application of mutualisation to contracts with direct participation features, so, in principle, it could apply to other types of participating contracts too. However, meeting the criteria of mutualisation will arguably be more challenging the more the contract features are dissimilar to those of a contract with direct participation features.
- To the extent mutualisation applies across groups of contracts written in different reporting periods, an entity will be able to offset losses on some groups with profits from other groups when measuring the affected groups. The question arises as to whether an entity will achieve the same outcome by measuring the affected groups together on the basis of the combined risk sharing of those groups. Although the standard does not prohibit the use of practical expedients that would achieve the same outcome, an entity would have to substantiate the measurement outcome in the same way, taking into account all relevant aspects of the measurement. For example, an entity must not only consider the effect of loss recognition, but also the release pattern of the contractual service margin over the coverage period.

12.2. Participating insurance contracts without direct participation features

Insurance contracts without direct participation features must apply the general model without adaptation, even though such contracts may have participation features (also referred to as indirect participating contracts).

The terms of some insurance contracts without direct participation features give an entity discretion over the cash flows to be paid to policyholders. A change in discretionary cash flows is regarded as relating to future service, and, accordingly, adjusts the contractual service margin. To determine how to identify a change in discretionary cash flows, an entity should specify at inception of the contract, the basis on which it expects to determine its commitment under the contract, for example, the commitment could be based on a fixed interest rate, or returns that vary based on specified asset returns.⁴⁰⁷

An entity should use that specification to distinguish between the effect of changes in assumptions that relate to financial risk on that commitment (which do not adjust the contractual service margin) and the effect of

⁴⁰⁷ IFRS 17.B98.

discretionary changes to that commitment (which adjust the contractual service margin). $^{\rm 408}$

If an entity cannot specify at inception of the contract, what it regards as its commitment under the contract and what it regards as discretionary, it must consider its commitment to be the return implicit in the estimate of the fulfilment cash flows at inception of the contract, updated to reflect current assumptions for financial risk.⁴⁰⁹

Illustration 67 – Adjust the contractual service margin for the effects of a change in discretionary cash flows

Entities A and B issue identical groups of insurance contracts without direct participation features one day before a reporting period ends. The contracts have a coverage period of five years. The policyholder receives the higher of a fixed death benefit or an account balance if he or she dies during the coverage period or an account balance at the end of the coverage period if he or she survives the coverage period. The contract transfers significant insurance risk, although for the purposes of illustrating the effect of discretion over amounts credited to policyholder account balances, we disregard the death benefit cost.

At contract inception, the entities:

- Receive premiums of CU1,000
- Specify that their commitment under the contract is to credit interest to the account balances at a rate equal to the return on an internally specified pool of assets, minus a 2% spread
- Expect investment returns from the specified pools of assets to be 10% a year
- Expect to pay benefits at maturity of the contracts of CU1,469 (i.e., to credit interest at the rate of 8% a year for five years (CU1,000 x 1.08^5 = CU1,469)
- Recognise fulfilment cash flows of CU912 (CU1,469 ÷ 1.1^5)
- Recognise a contractual service margin of CU88 (CU1,000 CU912)

At the first subsequent reporting date (one day later), both entities revise their expectations of returns from the specified pool of assets downward from 10% to 9% a year

Entity A's stated policy is that it will maintain its 2% spread. Therefore, Entity A:

- Expects to credit interest to the account balances of its policyholders at the rate of 7% a year
- Expects to pay benefits at maturity of CU1,403 (CU1,000 x 1.07⁵ = CU1,403)

 ⁴⁰⁸ IFRS 17.B99.
⁴⁰⁹ IFRS 17.B100.

lllu of	ustration 67 — Adjust the contractual service margin for the effects a change in discretionary cash flows (cont'd)
•	Measures fulfilment cash flows at the reporting date of CU912 (CU1,403 \div 1.09^5 = CU912)
•	Maintains the contractual service margin of the group of contracts at CU88 because the measurement of fulfilment cash flows has not changed (assume accretion of interest and release of contractual service margin to profit or loss in one day is insignificant)
En de yea	tity B decides to apply its discretion and reduce the spread that it ducts from the return on the specified pool of assets from 2% to 1% a ar. Therefore, Entity B:
•	Expects to credit interest to the account balances of its policyholders at the rate of 8% a year (9% expected annual return, minus 1% spread)
•	Expects to pay benefits at maturity of CU1,469
•	Measures fulfilment cash flows at the reporting date of CU956 (CU1,469 ÷ 1.09^5 = CU956)
•	Adjusts the contractual service margin for the group of contracts from CU88 to CU44 to reflect the adjustment to fulfilment cash flows resulting from an increase in fulfilment cash flows caused by its discretion to change the basis of policyholder payments (CU912 – CU956 = -CU44, contractual service margin of CU88 – CU44 = CU44)

12.3. Contracts with direct participation features

IFRS 17 identifies a separate set of insurance contracts with participation features described as insurance contracts with direct participation features. These contracts apply an adapted version of the general model, commonly referred to as the 'variable fee' approach.

For contracts using the variable fee approach, the changes in the contractual service margin are mostly driven by the movements in the assets 'backing' the contracts or other profit-sharing items (referred to as 'underlying items') rather than by the fulfilment cash flows of the insurance contract liability. Use of the variable fee approach instead of the general model is mandatory for those insurance contracts that meet the criteria of the variable fee approach (see 12.3.1 below). The assessment of eligibility for the variable fee approach should be performed at individual contract level although in practice this could be applied to 'clusters' of contracts as long as the outcome would not be different. The Board observed that one assessment should be sufficient for an entity to determine whether the criteria are met for each contract in a set of homogenous contracts issued in the same market conditions and priced on the same basis.⁴¹⁰

The variable fee approach applies to insurance contracts that meet its criteria; the fact that participation features are discretionary does not necessarily preclude contracts from meeting the criteria. However, contracts with

⁴¹⁰ IFRS 17.BC249D.

participation features are significantly different across jurisdictions. Not all contracts with participation features will meet the criteria to be accounted for as direct participation contracts.

Conceptually, insurance contracts with direct participation features are contracts under which an entity's obligation to the policyholder is the net of:⁴¹¹

- The obligation to pay the policyholder an amount equal to the fair value of the underlying items
- A variable fee that the entity will deduct from the obligation in exchange for the future service provided by the insurance contract comprising:
 - The amount of the entity's share of the fair value of the underlying items, less
 - Fulfilment cash flows that do not vary based on the returns on underlying items

The Board concluded that returns to the entity from underlying items should be viewed as part of the compensation the entity charges the policyholder for service provided under the insurance contract, rather than as a share of returns from an unrelated investment, in a narrow set of circumstances in which the policyholders directly participate in a share of the returns on the underlying items. In such cases, the fact that the fee for the contract is determined by reference to a share of the returns on the underlying items is incidental to its nature as a fee. The Board concluded, therefore, that depicting the gains and losses on the entity's share of the underlying items as part of a variable fee for service faithfully represents the nature of the contractual arrangement.⁴¹²

IFRS 17 requires the contractual service margin for insurance contracts with direct participation features to be updated for more changes than those affecting the contractual service margin for other insurance contracts. In addition to the adjustments made for other insurance contracts, the contractual service margin for insurance contracts with direct participation features is also adjusted for the effect of changes in:⁴¹³

- The entity's share of the underlying items
- Financial risks other than those arising from the underlying items, for example, the effect of financial guarantees

The Board decided that these differences are necessary to give a faithful representation of the different nature of the fee in these contracts. The Board concluded that, for many insurance contracts, it is appropriate to depict the gains and losses on any investment portfolio related to the contracts in the same way as gains and losses on an investment portfolio unrelated to insurance contracts.⁴¹⁴

⁴¹¹ IFRS 17.B104.

⁴¹² IFRS 17.BC244.

⁴¹³ IFRS 17.BC240.

⁴¹⁴ IFRS 17.BC241.

Illustration 68 – The 'variable fee approach' compared to the general model

A group of contracts with participating features was written at the beginning of the year, in which the entity received premiums totalled CU1,000, which was used to purchase financial assets. The policyholder participates in 90% and the entity in 10% of the assets' return.

At initial recognition, the expected present value of the cash outflows is CU900 and the contractual service margin is CU100. Assume the CU900 represents a non-distinct investment component.

Over the contract term of three years, the change in the fair value of the underlying financial assets amount to a net gain of CU30, of which the policyholders received CU27 (90% x CU30) and the entity CU3 (10% x CU30).

In addition, the entity incurred, cumulatively over the three-year period, cash flows that do not vary based on the returns on underlying items of CU2.

Assuming the impact of all other variables over the three-year period to be negligible, the cumulative results reported in the entity's statement of profit or loss can be illustrated, as follows:

	Cumulative results over the three-year term		
	General model	Variable fee approach	
	CUm	CUm	
Insurance revenue*	100	103	
Insurance services expenses*	(2)	(2)	
Insurance services result	98	101	
Investment income (IFRS 9)	30	30	
Insurance finance and expense	(27)	(30)	
Net financial result	3	-	

*The insurance revenue and insurance services expenses exclude the nondistinct investment component of CU900.

Under the general model, the subsequent change in the entity's share of the underlying items would not form part of the contractual service margin and would have emerged as part of the net finance result as incurred. In terms of the 'variable fee approach', a change in the entity's share of the underlying items forms part of the contractual service margin and subsequently released to insurance revenue over the coverage period.

12.3.1. Definition of an insurance contract with direct participation features

An entity shall assess whether a contract has direct participation features using its expectations at inception of the contract and shall not reassess the conditions, unless the contract is modified (see 13.1 below for modifications).⁴¹⁵ As noted at 12.3 above, the assessment is made at individual contract level.

Insurance contracts with direct participation features are insurance contracts that are substantially investment-related service contracts under which an entity promises an investment return based on underlying items (i.e., items that determine some of the amounts payable to a policyholder). Hence, these contracts are defined as insurance contracts for which:⁴¹⁶

- The contractual terms specify that the policyholder participates in a share of a clearly identified pool of underlying items (see 12.3.1.A below).
- The entity expects to pay the policyholder an amount equal to a substantial share of the fair value returns from the underlying items (see 1.3.1.B below).
- The entity expects a substantial proportion of any change in the amounts paid to the policyholder to vary with the change in fair value of the underlying items (see 12.3.1.C below).

When an insurance contract is acquired in a business combination or transfer, the criteria as to whether the contract applies the variable fee approach should be assessed at the business combination or transfer date (see 14 below).

Situations where cash flows of insurance contracts in a group affect the cash flows of contracts in other groups are discussed at 12.1 above.

12.3.1.A. A share of a clearly defined pool of underlying items

The pool of underlying items can comprise any items, for example, a reference portfolio of assets, the net assets of the entity, or a specified subset of the net assets of the entity, as long as they are clearly identified by the contract. An entity need not hold the identified pool of underlying items (although there are accounting consequences of this - see 15.3.1 below). However, a clearly identified pool of underlying items does not exist when:⁴¹⁷

- An entity can change the underlying items that determine the amount of the entity's obligation with retrospective effect
- There are no underlying items identified, even if the policyholder could be provided with a return that generally reflects the entity's overall performance and expectations, or the performance and expectations of a subset of assets the entity holds. An example of such a return is a crediting rate or dividend payment set by the entity at the end of the period to which it relates. In this case, the obligation to the policyholder reflects the crediting rate or dividend amounts the entity has set, and does not reflect identified underlying items.

⁴¹⁵ IFRS 17.B102.

⁴¹⁶ IFRS 17.B101.

⁴¹⁷ IFRS 17.B106.

The word 'share' referred to in the section heading above does not preclude the existence of the entity's discretion to vary amounts paid to the policyholder. However, the link to the underlying items must be enforceable.⁴¹⁸

For the variable fee approach to be applied, the contract must specify a determinable fee and because of this a clearly identified pool of underlying items must exist. Without a determinable fee, which can be expressed as a percentage of portfolio returns or portfolio asset values rather than only as a monetary amount, the share of the return on the underlying items the entity retains would be entirely at the discretion of the entity and, in the Board's view, this would not be consistent with being equivalent to a fee.⁴¹⁹ However, IFRS 17 does not mention a stated minimum determinable fee.

The standard does not require that an entity measures the underlying items at fair value in the statement of financial position. There is also no restriction on the type of asset which can be an underlying item. This means that underlying items can be, for example, a subsidiary of the group, assets such as financial assets measured at amortised cost or non-participating insurance contracts measured in accordance with the general model in IFRS 17. In February 2020, the IASB confirmed that non-participating insurance contracts held as underlying items should be measured in accordance with IFRS 17 rather than at fair value on the grounds that creating an exception for these assets would add significant complexity to IFRS 17.⁴²⁰ However, as discussed at 1.3.1.B below, a substantial portion of the fair value returns of underlying items, regardless as to how they are measured for accounting purposes, must be payable to the policyholder.

12.3.1.B. A substantial share of the fair value returns on the underlying items

The entity should expect to pay to the policyholder an amount equal to a substantial share of the fair value returns on the underlying items. It further observes that it would not be a faithful representation to depict an obligation to pay an amount equal to the fair value of the underlying items if the policyholder does not expect to receive a substantial part of the fair value returns on the underlying items.⁴²¹

IFRS 17 provides no specific quantitative threshold for 'substantial'. However, an entity should interpret the word 'substantial' as in both 'substantial share' and 'substantial proportion' (see 11.2.1.C below): ⁴²²

In the context of the objective of insurance contracts with direct participation features being contracts under which the entity provides investment-related services and is compensated for the services by a fee that is determined by reference to the underlying items

And

Assess the variability in the amounts:

⁴¹⁸ IFRS 17.B105.

⁴¹⁹ IFRS 17.BC245(a).

 ⁴²⁰ IASB staff Paper 2F, Amendments to IFRS 17: Other topics raised by respondents to the Exposure Draft, IASB, February 2020, Appendix A, p.11.
⁴²¹ IFRS 17.BC245(b)(i).

⁴²² IFRS 17.B107.

- Over the duration of the insurance contract
- On a present value probability-weighted average basis, not a best or worst outcome basis

IFRS 17 further explains that if, for example, the entity expects to pay a substantial share of the fair value returns on underlying items, subject to a guarantee of a minimum return, there will be scenarios in which:⁴²³

- The cash flows that the entity expects to pay to the policyholder vary with the changes in the fair value of the underlying items because the guaranteed return and other cash flows that do not vary based on the returns on underlying items do not exceed the fair value return on the underlying items
- The cash flows that the entity expects to pay to the policyholder do not vary with the changes in the fair value of the underlying items because the guaranteed return and other cash flows that do not vary based on the returns on underlying items exceed the fair value return on the underlying items

The entity's assessment of the variability will reflect a present value probabilityweighted average of all these scenarios.

As many participation contracts contain guarantees, the question as to whether a contract is one with direct participation features or not depends on the effect of the guarantee on the expected value of the cash flows at inception. It does not mean that there can be no scenarios in which the guarantee 'kicks in'. Instead, it does mean that the effect of those scenarios on a probabilityweighted basis should be such that a substantial share of the expected returns payable to the policyholder are still based on the fair value of the underlying items. Considering the impact of options and guarantees on the eligibility criteria will have to be based on the specific facts and circumstances and requires the use of judgement.

When the cash flows of insurance contracts in a group affect the cash flows to policyholders of contracts in other groups (see 12.1 above), an entity should assess whether the conditions for meeting the classification of the contracts as insurance contracts with direct participation features are met by considering the cash flows that the entity expects to pay to the policyholders.⁴²⁴

Frequently asked questions

Question 12-2: Would contracts where the return is based on an amortised cost measurement of the underlying items fail the definition of insurance contract with direct participation features? [TRG meeting February 2018 – Agenda paper no. 7, Log S26]

The IASB staff observed that contracts which provide a return that is based on an amortised cost measurement of the underlying items would not automatically fail the definition of an insurance contract with direct participation features. Entities' expectations of returns would be assessed over the duration of the contract and, therefore, returns based on an amortised cost measurement might equal returns based on the fair value of

⁴²³ IFRS 17.B108.

⁴²⁴ IFRS 17.B103.

Frequently asked questions (cont'd)

the underlying items over the contract duration. The TRG members agreed with the IASB staff's conclusion that the variable fee approach could be met when the return is based on amortised cost measurement of the underlying items.

Question 12-3: For a unit-linked insurance contract for which the entity charges an asset management fee, determined as a percentage of the fair value of the underlying items at the end of each period, and a premium for mortality cover, by reducing the underlying items at the beginning of each period, how does the entity apply paragraph B101(b)? [TRG meeting April 2019 – Agenda paper no. 2, Log S115]

The submission asked, firstly, how to determine the share of the fair value returns on the underlying items ignoring the fixed premium charge for mortality cover and, secondly, whether and how the premium for mortality cover deducted from the underlying items impacts the calculation of the fair value returns. Paragraph B101(b) of IFRS 17 requires that the entity expects to pay to the policyholder an amount equal to a substantial share of the fair value returns on the underlying items as a condition for meeting the definition of an insurance contract with direct participation features The IASB staff stated that, in this example, the fixed annual charge for mortality cover is, in effect, an amount paid out of the policyholder's share and, therefore, the policyholder's share includes that charge.

However, to determine whether the definition of an insurance contract with direct participation features is met, an entity also needs to consider whether it expects a substantial proportion of any change in the amounts paid to the policyholder to vary with the change in the fair value of the underlying items (see 14.3.1.C below). For the purposes of this condition, an entity considers changes in any amounts to be paid to the policyholder regardless of whether they have been paid from the underlying items or not. The TRG members observed that a distinguishing feature in this example is that the premium for mortality is fixed rather than varying with the fair value of the underlying items. The IASB staff confirmed that the analysis might differ had the charge varied with the fair value of the underlying items. The TRG members also observed that when determining whether an insurance contract is in the scope of the variable fee approach, in some circumstances it may be necessary to consider the way a charge is determined, rather than the way it is labelled in the contract, to identify what the charge represents. The IASB staff also noted that one of the other conditions of assessing eligibility for the variable fee approach is that a substantial proportion of the changes in amounts paid to policyholders should vary with the changes in the fair value of the underlying items, regardless of whether they have been paid from the underlying items or not.

Illustration 69 - Calculation of the expected fair value returns with and without mortality charge

This illustration shows how an entity calculates the expected fair value returns on the underlying items applying IFRS 17.B101(b).

Without mortality charge

An insurance contract gives the policyholder the returns on underlying items, after paying an annual management fee of 0.75% of the assets. The expected duration of the contract is five years and the expected annual returns on underlying items are 5%. The expected account balance is calculated in the following table:

Year	1	2	3	4	5	Total
	CU	CU	CU	CU	CU	CU
Opening balance	15,000	15,632	16,290	16,977	17,692	
Returns on underlying items	750	782	815	849	885	4,081
Annual management fee	(118)	(123)	(128)	(134)	(139)	(642)
Closing balance	15,632	16,290	16,977	17,692	18,437	

To apply paragraph B101(b) of IFRS 17, the expected fair value returns are CU4,081, of which the entity expects to pay to the policyholder CU3,437 (CU18,437 - CU15,000)

With mortality charge

An insurance contract gives the policyholder the returns on underlying items, after paying an annual management fee of 0.75% of the fair value of the underlying items. The expected duration of the contract is 5 years and the expected annual returns on underlying items are 5%. An annual charge for mortality cover of CU100 reduces the underlying items at the start of each year. The expected account balance is calculated in the following table:

Year	1	2	3	4	5	Total
	CU	CU	CU	CU	CU	CU
Opening balance	15,000	15,527	16,076	16,648	17,245	
Mortality charge	(100)	(100)	(100)	(100)	(100)	(500)
Returns on underlying items	745	771	799	827	857	3,999
Annual management fee	(118)	(122)	(127)	(131)	(136)	(634)
Closing balance	15,527	16,067	16,648	17,245	17,866	

To apply paragraph B101(b) of IFRS 17, the expected fair value returns are CU3,999. The entity expects to pay to the policyholders CU2,866 (CU17,866 - CU15,000) having deducted the mortality charge. Hence, in total, the share of the fair value returns the entity expects to pay to the policyholder is CU3,366 (CU2,866 + CU500).
12.3.1.C. A substantial proportion of any change in the amounts to be paid to the policyholder to vary with the change in fair value of the underlying items

The entity should expect that a substantial proportion of any change in the amounts to be paid to the policyholder varies with the change in fair value of the underlying items. It would not be a faithful representation to depict an obligation to pay an amount equal to the fair value of the underlying items if the entity were not to expect changes in the amount to be paid to vary with the change in fair value of the underlying items.⁴²⁵

The discussion at 12.3.1.B applies here also, including how to apply the words 'substantial proportion'.

How we see it

- Participating contracts differ significantly between jurisdictions. Not all participating contracts will meet the criteria to be accounted for under the variable fee approach. An entity will need to exercise judgement when deciding whether a contract contains direct participation features and, therefore, will be eligible to apply the variable fee approach. However, while the degree to which a contract may meet or fail the eligibility criteria will vary, the outcome is binary. Examples of products that are generally expected to be in scope are UK-style with-profits contracts, unit-linked contracts and Continental European contracts with 90% participation.
- If underlying items are not measured on a fair value basis in an entity's financial statements, this does not preclude them from qualifying for the variable fee approach. The eligibility depends on the expectation of payments of a substantial share of the fair value returns to the policyholder rather than the accounting measurement of the underlying items.
- Many participating contracts contain options and guarantees. An option may, for example, include a policyholder's right to change a particular financial benefit to another type of financial benefit under potentially favourable terms. A guarantee could entitle the policyholder to a specified minimum annual return. An entity would need to apply IFRS 9 to determine whether, and if so, how an embedded derivative is required to be separated.
- The impact that options and guarantees that are not separated as embedded derivatives have on the eligibility criteria for the variable fee approach will require the use of judgement. The question as to whether a contract includes direct participation features can depend on the effect of these guarantees and options on the expected value of the cash flows at inception. In order to qualify for the variable fee approach the effect of scenarios that result in the guarantee being payable, on a probabilityweighted basis, should be such that a substantial share of the expected returns payable to the policyholder are still based on the fair value of the underlying items.

⁴²⁵ IFRS 17.BC245(b)(ii).

12.3.2. Measurement of the risk adjustment for non-financial risk using the variable fee approach

IFRS 17's guidance for the measurement of the risk adjustment for nonfinancial risk (see 9.4 above) does not prescribe how the risk adjustment should be calculated for contracts where the entity shares in the results from underlying items with policyholders. However, the risk adjustment for nonfinancial risk is the compensation that the entity requires for bearing the uncertainty about the amount and timing of cash flows that arise from nonfinancial risk as the entity fulfils the insurance contract. Consequently, the risk adjustment for non-financial risk should reflect only the risk of the entity and not also the additional risk of the policyholder. However, the entity's risk is not limited to the shareholder's share in the underlying items, but would also include the risk of any returns which do not vary with underlying items (e.g., the effect of guarantees).

12.3.3. Measurement of the contractual service margin using the variable fee approach

At initial recognition, the contractual service margin for a group of insurance contracts with direct participation features is measured in the same way as a group of insurance contracts without direct participation features (i.e., as a balancing figure intended to eliminate any day 1 profits unless the contract is onerous - see 9.5 above). However, the contractual service margin is adjusted based on changes in the fair value of underlying items, which includes the impact of discount rate changes rather than discount rates at the measurement date of the group (see 9.3above).⁴²⁶

⁴²⁶ IFRS 17.B113(a).

At the end of a reporting period, for insurance contracts with direct participation features, the carrying amount of a group of contracts equals the carrying amount at the start of the reporting period adjusted, as follows:⁴²⁷

Change in the carrying amount of the contractual service margin in a period under the variable fee approach		
Contractual service margin at the beginning of the period	х	
Effect of new contracts added to the group (see 7 above)	X/(X)	
Change in the amount of the entity's share of the change in the fair value of the underlying items (see 12.3.1 above), except to the extent that:	X/(X)	
 The entity elects to and applies risk mitigation (see 12.3.5 below) 		
The decrease in the amount of the entity's share of the fair value of the underlying items exceeds the carrying amount of the contractual service margin, giving rise to an onerous contract loss (see 9.8 above)		
Or		
The increase in the amount of the entity's share of the fair value of the underlying items reverses any onerous contract loss above.		
Change in fulfilment cash flows relating to future service, except to the extent that:	X/(X)	
 Risk mitigation is applied (see 12.3.5 below) 		
 Such increases in the fulfilment cash flows exceed the carrying amount of the contractual service margin, giving rise to an onerous contract loss (see 9.8 above) 		
Or		
 Such decreases in the fulfilment cash flows are allocated to the loss component of the liability for remaining coverage. 		
Effect of currency exchange differences (see 8.3 above)	X/(X)	
The amount recognised as insurance revenue because of the transfer of insurance contract services in the period, determined by the allocation of the contractual service margin remaining at the end of the reporting period (before any allocation) over the current and remaining coverage period.	(X)	
Contractual service margin at the end of the period	X	

⁴²⁷ IFRS 17.45.

IFRS 17 further states that:

- Changes in the obligation to pay the policyholder an amount equal to the fair value of the underlying items do not relate to future service and do not adjust the contractual service margin⁴²⁸
- Changes in the amount of the entity's share of the fair value of the underlying items relate to future service and adjust the contractual service margin⁴²⁹

Changes in fulfilment cash flows that do not vary based on returns on underlying items comprise:⁴³⁰

- The change in the effect of the time value of money and financial risks not arising from the underlying items. An example of this would be the effect of financial guarantees. These relate to future service and adjust the contractual service margin except to the extent that the entity applies risk mitigation
- Other changes in estimates of fulfilment cash flows. An entity applies the same requirements consistent with insurance contracts without direct participation features to determine what extent they relate to future service and therefore adjust the contractual service margin (see 9.6.3 above)

An entity is not required to identify the separate components of the adjustments to the contractual service margin resulting from changes in the entity's share of the fair value of underlying items that relate to future service and changes in the fulfilment cash flows relating to future service. Instead, a combined amount may be determined for some or all of the adjustments.⁴³¹

Except in situations when a group of contracts is onerous, or to the extent the entity applies the risk mitigation exception (see 12.3.5 below), the effect of the general model and the variable fee approach may be compared, as follows:

Comparison of	General model	Variable fee approach
Insurance finance income or expenses (total) recognised in statement of financial performance	 Change in the carrying amount of fulfilment cash flows arising from the time value of money and financial risk 	 Change in the fair value of underlying items
	 Accretion of interest on the contractual service margin at rate locked-in at initial recognition 	
	Any difference between the present value of a change in fulfilment cash flows measured at current rates and locked- in rates that adjust the contractual service margin	

⁴²⁸ IFRS 17.B111.
⁴²⁹ IFRS 17.B112.
⁴³⁰ IFRS 17.B113.

⁴³¹ IFRS 17.B114.

Comparison of	General model	Variable fee approach
Changes in the carrying amount of fulfilment cash flows arising from the time value of money and financial risk	Recognised immediately in the statement of financial performance ⁴³²	Adjusts the contractual service margin unless risk mitigation applies (in which case it adjusts profit or loss or other comprehensive income) ⁴³³
Discount rates for accretion of, and adjustment to, the contractual service margin	Rates determined at initial recognition	Rate included in the balance sheet measurement (i.e., current rates) ⁴³⁴

How we see it

- Under the variable fee approach, an entity is not required to identify the separate components of the adjustments to the contractual service margin resulting from changes in the entity's share of the fair value of underlying items that relate to future service and changes in the fulfilment cash flows relating to future service. Not making this split might be easier administratively. However, disaggregating this change might provide useful information, better reflect the sources of measurement changes, and result in greater consistency with the insurance contract roll-forward analyses for contracts accounted for under the general model.
- An entity that does not separate the changes in its share of the fair value of underlying items from changes in the policyholder's share is likely to need to disclose the roll-forward of the carrying amount of insurance contracts with direct participation features separately from the rollforward for other insurance contracts, because the gross amounts of insurance finance income or expenses and changes in fulfilment cash flows relating to future services (including the policyholders' share of the change in the fair value of underlying items), may be significantly different in size and nature from corresponding amounts for contracts subject to the general model.

⁴³² IFRS 17.87-89.

⁴³³ IFRS 17.87(c), B113(b).

⁴³⁴ IFRS 17.B113(a).

12.3.4. Allocation of the contractual service margin to profit or loss

The contractual service margin for an insurance contract with direct participation features is allocated to profit or loss using the same methodology discussed at 9.7 above for the general model. That is, by identifying the coverage units in the group and releasing the contractual service margin in profit and loss to reflect the insurance contract services in the period.

IFRS 17 defines insurance contract services in respect of contracts with direct participation features as: $^{\rm 435}$

- Coverage for an insured event (insurance coverage)
- The management of underlying items on behalf of the policyholder (investment-related service)

This means that the period over which the contractual service margin is amortised for contracts with direct participation features includes both the period in which the entity provides coverage and the period over which it provides an investment-related service.

For the purpose of amortising the contractual service margin, the period of investment-related service ends at or before the date that all amounts due to current policyholders relating to those services have been paid, without considering payments to future policyholders included in the fulfilment cash flows as a result of mutualisation (see 12.1 above).⁴³⁶

Illustration 70 – Insurance services and investment component with different durations

An insurance contract with direct participation features matures in year 10 and pays the customer the account value at maturity. The contract also includes a death benefit that varies depending on which year in the 10-year period the death occurs. Specifically, if the customer dies in years 1 to 5, the customer's beneficiary would receive a death benefit that is the higher of 110% of the premium paid or the accumulated account value (assume that the death benefit for years 1 to 5 results in significant insurance risk). However, if the customer dies in years 6 to 10 the customer's beneficiary receives only the account value. There is no surrender penalty.

The insurer needs to consider all 10 years for determining coverage units and amortisation of the contractual service margin as over that period insurance contract services are provided rather than only during years 1-5.

⁴³⁵ IFRS 17.Appendix A.

⁴³⁶ IFRS 17.B119A.

See also 12.2 above for discussion of insurance contracts without direct participation features.

12.3.5. Risk mitigation

For contracts with direct participation features, IFRS 17 requires changes in the shareholder's share of underlying items and cash flows that do not vary with underlying items (together part of the variable fee of a such contract) to adjust the contractual service margin (see 12.3.3 above). However, amounts payable to policyholders that do not vary with underlying items create risks for an entity, particularly if the amounts payable are independent of the amounts that the entity receives from investments, for example, if the insurance contract includes guarantees. An entity is also at risk from possible changes in its share of the fair value returns on underlying items and may purchase derivatives to mitigate such risks. When applying IFRS 9, such derivatives are measured at fair value through profit or loss. Consequently, an accounting mismatch arises because the change in the carrying amount of the insurance liability (i.e., the hedged item) does not go through profit or loss. A similar accounting mismatch arises if the entity uses instruments other than derivatives to mitigate risk such as reinsurance contracts held because the variable fee approach cannot be used for reinsurance contracts held.⁴³⁷

To address these mismatches, IFRS 17 permits entities relief from the requirements of the variable fee approach. This relief allows an entity to choose not to recognise a change in the contractual service margin to reflect some or all of the changes in the time value of money or the effect of financial risk on:⁴³⁸

- The amount of the entity's share of the underlying items if the entity mitigates the effect of financial risk on that amount using derivatives or reinsurance contracts held
- The changes in fulfilment cash flows that do not vary based on the returns on underlying items arising from a change in the effect of the time value of money and financial risk, for example, the effect of financial guarantees, if the entity mitigates the effect of financial risk on those fulfilment cash flows using derivatives, non-derivative financial instruments measured at fair value through profit or loss, or reinsurance contracts held

See illustration 68 above for a comparison between the general model and the variable fee approach.

An entity that elects to use this approach should determine the eligible fulfilment cash flows in a group of contracts in a consistent manner in each reporting period.⁴³⁹

When risk mitigation is applied using derivatives or non-derivative financial instruments, any insurance finance income or expenses arising should be included in profit or loss. If an entity mitigates the effect of financial risk using reinsurance contracts held, it should apply the same accounting policy for the presentation of insurance finance income or expenses as the entity applies to the reinsurance contracts held (i.e., profit and loss if disaggregation is not

⁴³⁷ IFRS 17.BC250-BC253.

⁴³⁸ IFRS 17.B115.

⁴³⁹ IFRS 17.B117.

applied or split between profit and loss and other comprehensive income if disaggregation is applied - see 15.3 below).⁴⁴⁰

Use of this relief is conditional on the entity having a previously documented risk management objective and strategy for mitigating the financial risk described above. In applying that objective and strategy:⁴⁴¹

- An economic offset exists between the insurance contracts and the derivative, non-derivative financial instrument measured at fair value, or reinsurance contract held (i.e., the values of the insurance contracts and the risk mitigating items generally move in opposite directions because they respond in a similar way to the changes in the risk being mitigated). An entity should not consider accounting measurement differences in assessing the economic offset.
- Credit risk does not dominate the economic offset.

If, and only if, any of the conditions above cease to be met, an entity must cease to apply the risk mitigation accounting prospectively from that date. An entity must not make any adjustment for changes previously recognised in profit or loss.⁴⁴² This means that an entity can discontinue the use of risk mitigation option only if any of the eligibility criteria cease to apply and not on a voluntary basis. The application of risk mitigation is intended to be aligned with the hedge accounting requirements in IFRS 9 and IFRS 9 does not allow an entity to discontinue hedge accounting unless the hedging relationship ceases to meet the qualifying criteria.⁴⁴³

IFRS 17, as issued in May 2017, permitted the risk mitigation exception to apply only to derivatives. The Board received feedback that applying the requirements in IFRS 17 when an entity holds a reinsurance contract that covers insurance contracts with direct participation features results in an accounting mismatch. The underlying insurance contracts issued are accounted for applying the variable fee approach and the reinsurance contract held is not. Reinsurance contracts that cover insurance contracts with direct participation features transfer both non-financial risk and financial risk to the reinsurer. However, the Board rejected a suggestion to permit an entity to apply the variable fee approach to those reinsurance contracts held. Despite this, the Board acknowledged that an accounting mismatch could arise when an entity mitigates the effect of financial risk using a reinsurance contract held that is similar to the mismatch that could arise when an entity uses derivatives. Accordingly, the Board amended IFRS 17 so that the risk mitigation also applies when an entity uses reinsurance.⁴⁴⁴

The Board also received feedback that some entities mitigate the effect of some financial risk on fulfilment cash flows that do not vary with returns on underlying items using non-derivative financial instruments. The Board was persuaded that if those non-derivative financial instruments are measured at fair value through profit or loss, an accounting mismatch could arise, which is similar to the accounting mismatch for derivatives. Accordingly, the Board

⁴⁴⁰ IFRS 17.B117A.

⁴⁴¹ IFRS 17.B116.

⁴⁴² IFRS 17.B118.

 ⁴⁴³ Amendments to IFRS 17 Insurance Contracts - Annual improvements, IASB staff paper 2D, April 2019. p.3.
 ⁴⁴⁴ IFRS 17.BC256B.

A closer look at the new Insurance Contracts standard, June 2021

extended the risk mitigation option to apply in that circumstance. The Board decided to limit the extension to only those non-derivative financial instruments measured at fair value through profit or loss. For those non-derivative financial instruments, the extension resolves the accounting mismatch in the same way it resolves the accounting mismatch for derivatives (measured at fair value through profit or loss).⁴⁴⁵

In contrast, the Board considered but rejected a suggestion that an entity should be permitted to apply the risk mitigation option when it uses nonderivative financial instruments measured at fair value through other comprehensive income. The Board noted that, in most circumstances, the risk mitigation option would not resolve perceived mismatches between amounts recognised in profit or loss for insurance contracts with direct participation features using the other comprehensive income option in IFRS 17 and assets measured at fair value through other comprehensive income. Further, the suggestion would have resulted in the ineffectiveness of the risk mitigation strategy being recognised in other comprehensive income. That would be inconsistent with the hedge accounting requirements in IFRS 9. The Board observed than an entity could avoid mismatches by applying both the fair value option in IFRS 9 (to designate financial assets at fair value through profit or loss) and the risk mitigation option in IFRS 17. The Board was also not persuaded by the view that an entity should be permitted to apply the risk mitigation option when it uses non-derivative financial instruments to mitigate the effect of financial risk on the entity's share of the fair value of the underlying items. For instance, when the entity mitigates such financial risk by investing premiums in assets other than the underlying items, e.g., through an investment in fixed rate bonds. In the Board's view, permitting an entity to apply the risk mitigation option in that circumstance would contradict the principle that an entity need not hold the underlying items for the variable fee approach to apply.446

How we see it

The exemption, in the case of risk mitigation, from the requirement of the variable fee approach to adjust the contractual service margin for changes in financial assumptions relating to future service is an important feature. It was introduced to reduce accounting mismatches that would otherwise arise from economic risk mitigation where movements in the fair value of derivatives, reinsurance contracts held, or non-derivative financial instruments are reported in profit and loss. The guidance in the standard raises some questions about the practical application of this approach. For example, how to interpret and apply the provision for "some or all" changes in the time value of money or financial risk to be excluded from the contractual service margin when an entity mitigates financial risk using the eligible instruments.

⁴⁴⁵ IFRS 17.BC256C.

⁴⁴⁶ IFRS 17.BC256D-E.

12.3.6. Disaggregation of insurance finance income or expenses between profit or loss and other comprehensive income

As discussed at 15.3 below, entities have an accounting policy choice, per portfolio of insurance contracts, between:

Including insurance finance income or expenses in profit or loss

Or

 Disaggregating insurance finance income or expenses between profit or loss and other comprehensive income

For insurance contracts with direct participation features, when disaggregation is selected, allocation of the insurance finance income or expenses between profit or loss and other comprehensive income is different depending on whether or not the underlying items are held, as follows:

- If the underlying items are not held, then the insurance finance income or expenses included in profit or loss is calculated using a systematic allocation arising from the estimates of future cash flows that that can be determined in one of two ways (known as the 'effective yield approach' and the 'projected crediting approach'). See 15.3.2 below.
- If the underlying items are held, then the insurance finance income or expenses included in profit or loss is an amount that eliminates accounting mismatches with income and expenses on the underlying items held. This means that the expenses or income from the movement of the insurance liability should exactly match the income or expenses included in profit or loss for the underlying items, resulting in the net of the two separately presented items being nil. This approach is sometimes referred to as the 'current period book yield approach'. (see 15.3.4. below).

Frequently asked questions

Question 12-4: For a direct participating contract that shares returns with policyholders by paying dividends, should the adjustment to the CSM reflect changes related to non-economic experience on underlying items be measured based on a statutory basis used to determine dividends, an IFRS measure, or a fair value measurement? In addition, in applying the current period book yield approach under paragraphs 89 and B134 of IFRS 17 to disaggregate insurance finance income or expense between profit or loss and other comprehensive income, is the adjustment limited to financial income or expenses on underlying items held? [TRG meeting April 2019 - Agenda paper no. 2, Log S114]

The submission described a specific fact pattern for a contract applying the variable fee approach where the entity shares returns on underlying items with policyholders by paying dividends. The dividend scale varies based on the market value returns with respect to economic experience of the investments, and on a statutory basis for the non-economic experience (such as from expenses and reinsurance contracts held). Two guestions were asked. Firstly, in determining the adjustment to be made to the contractual service margin under the variable fee approach for the shareholder's share in underlying items, should the change in the noneconomic experience on the underlying items be determined on an IFRS, statutory or fair value basis? Secondly, when an entity applies the current period book yield approach under paragraph 89 of IFRS 17 to disaggregate insurance finance income or expenses between profit or loss and other comprehensive income, is this limited to financial income or expense on underlying items held or should it include all income or expense arising from underlying items?

The IASB staff observed that under the variable fee approach an entity adjusts the contractual service margin of a group of contracts based on changes in the fair value of underlying items. Therefore, a statutory basis or an IFRS measure (which are not fair value measurements) cannot be used to determine the adjustment to the contractual service margin. The IASB staff also observed that, when disaggregation is applied under paragraphs 89 and B134 of IFRS 17, the amount of income or expense included in profit or loss should exactly match the income or expense included in profit or loss for the underlying items, resulting in the net of the two separately presented items being nil. Therefore, income or expense on underlying items is not limited to financial income or expense.

12.4. Investment contracts with discretionary participation features

An investment contract with discretionary participation features does not contain significant insurance risk and is, therefore, a financial instrument. Nevertheless, these contracts are within the scope of IFRS 17, provided the entity also issues insurance contracts.⁴⁴⁷

There is no *de minimis* limit on the number of insurance contracts that an entity must issue in order to ensure that its investment contracts with discretionary participation features are within the scope of IFRS 17. In theory, an entity need only issue one insurance contract.

An investment contract with discretionary participation features is a financial instrument that provides a particular investor with the contractual right to receive, as a supplement to an amount not subject to the discretion of the issuer, additional amounts:⁴⁴⁸

- That are expected to be a significant portion of the total contractual benefits
- The timing or size of these amounts are contractually at the discretion of the issuer
- That are contractually based on:
 - The returns on a specified pool of contracts or a specified type of contract
 - Realised and/or unrealised investment returns on a specified pool of assets held by the issuer

Or

The profit or loss of the entity or fund that issues the contract

Although investment contracts with discretionary participation features do not meet the definition of insurance contracts, the advantages of treating them the same as insurance contracts rather than as financial instruments when they are issued by entities that issue insurance contracts include:⁴⁴⁹

Investment contracts with discretionary participation features and insurance contracts that specify a link to returns on underlying items are sometimes linked to the same underlying pool of assets. Sometimes investment contracts with discretionary participation features share in the performance of insurance contracts. Using the same accounting for both types of contracts will produce more useful information for users of financial statements because it enhances comparability within an entity. It also simplifies the accounting for those contracts. For example, some cash flow distributions to participating policyholders are made in aggregate both for insurance contracts that specify a link to returns on underlying items and for investment contracts with discretionary participation features. This

⁴⁴⁷ IFRS 17.3(c).

⁴⁴⁸ IFRS 17 Appendix A.

⁴⁴⁹ IFRS 17.BC83.

makes it challenging to apply different accounting models to different parts of that aggregate participation.

- Both of these types of contract often have characteristics, such as long maturities, recurring premiums and high acquisition cash flows, that are more commonly found in insurance contracts than in most other financial instruments. The Board developed the model for insurance contracts specifically to generate useful information about contracts containing such features.
- If investment contracts with discretionary participation features were not accounted for by applying IFRS 17, some of the discretionary participation features might be separated into an equity component in accordance with the Board's existing requirements for financial instruments. Splitting these contracts into components with different accounting treatments would cause the same problems that would arise if insurance contracts were separated. Also, in the Board's view, the accounting model it has developed for insurance contracts, including the treatment of discretionary cash flows is more appropriate than using any other model for these types of contracts.

Investment contracts with discretionary participation features are accounted for in the same way as other insurance contracts. That is to say, the general model is applied (as discussed at 9 above) and, at initial recognition, an entity should assess whether the contracts contain direct participation features and hence should apply the variable fee approach (discussed at 12.3 above).

However, as investment contracts with discretionary participation features do not transfer insurance risk, IFRS 17 requires certain modifications:⁴⁵⁰

- The date of initial recognition is the date the entity becomes party to the contract (see section 7).
- The contract boundary (see section 9.1 is modified so that cash flows are within the contract boundary if they result from a substantive obligation of the entity to deliver cash at a present or future date. The entity has no substantive obligation to deliver cash if it has the practical ability to set a price for the promise to deliver the cash that fully reflects the amount of cash promised and related risks.
- The allocation of the contractual service margin is modified so that the entity recognises the contractual service margin over the duration of a group of contracts in a systematic way that reflects the transfer of investment services under the contract.

⁴⁵⁰ IFRS 17.71.

Frequently asked questions

Question 12-5: Does an investment contract that contains a crediting rate meet the third criteria of the definition of an investment contract with discretionary participation features in IFRS 17? The question was asked in the light of the fact that paragraph BC162 of the Basis for Conclusions on IFRS 4 noted that the definition does not capture unconstrained contractual discretion to set a crediting rate that is used to credit interest or other returns to policyholders. [TRG meeting April 2019 - Agenda paper no. 2, Log S94]

The Basis for Conclusions of IFRS 4 states that: "The definition of a discretionary participation feature does not capture an unconstrained contractual discretion to set a 'crediting rate' that is used to credit interest or other returns to policyholders (as found in the contracts described in some countries as 'universal life' contracts). Some view these features as similar to discretionary participation features because crediting rates are constrained by market forces and the insurer's resources".

The submission asked whether an example contract met the third requirement in IFRS 17 to qualify as an investment contract with discretionary participation features relating to the contractual basis for the discretionary returns. The crediting rate in the example was based on returns of assets held as well as the weighted average rates on local treasury bonds. The crediting rate could be adjusted by the entity to some extent, based on future expected revenue and returns (the discretionary feature). The submissions assumed that the contract meets the first and second criteria of the definition of an investment contract with discretionary participation features in IFRS 17.

The IASB staff observed that the definition of an investment contract with discretionary participation features in IFRS 17 is consistent with the definition in IFRS 4. Both require that the additional discretionary amounts are contractually based on specified pools of contracts, specified pools of assets, or the profit or loss of the entity or fund that issues the contract. Any discretionary features in each investment contract need to be assessed against these criteria considering all relevant facts and circumstances. It appears that the IASB staff were sceptical that the investment contract in the example met the criteria of an investment contract with discretionary participation features.

How we see it

The release of the contractual service margin for investment contracts with discretionary participation features is not based on coverage units (see section 9.7), rather it is based on the investment services provided over the life of the contracts. It appears that this requirement is similar to the revenue recognition guidance contained in IFRS 15. Given that IFRS 15 would apply to investment contracts without discretionary participation features, it makes sense for this to be consistent with other investment management contracts.

12.4.1. Contracts with switching features

Some contracts may contain options for the policyholder to switch between funds over the lifetime of the contract and therefore change from holding an investment contract measured under IFRS 9 to holding an investment contract with discretionary participation features measured under IFRS 17 (or *vice versa*) provided the entity also issues insurance contracts. Where the assessment at contract inception has concluded that the contract is not an investment contract with discretionary participation features the question arises as to whether the existence of the option means that the contract is accounted for under IFRS 17 (as an investment contract with discretionary participation features. If the option contains features (for example in terms of pricing) that require it to be considered within the boundary of the contract (see 9.1 above) the option may already scope the contract within IFRS 17 from inception as an investment contract with discretionary participation features.

IFRS 17 states that once a contract is within its scope then it is not subsequently reassessed even if, at a later date, it is no longer a contract within its scope if the contract would have been reassessed at that date.⁴⁵¹ Therefore, investment contracts with discretionary participation features, issued by an entity that also issues insurance contracts, that subsequently lose their 'discretionary feature' as the result of the exercise of a policyholder option will remain within the scope of IFRS 17.

⁴⁵¹ IFRS 17.B25.

13.Contract modification and derecognition

A contract that qualifies as an insurance contract remains so until all rights and obligations are extinguished (i.e., discharged, cancelled or expired) unless the contract is derecognised because of a contract modification.⁴⁵²

IFRS 4 contained no guidance on when or whether a modification of an insurance contract might cause derecognition of that contract. Therefore, prior to IFRS 17, most insurers would have applied the requirements, if any, contained in local GAAP.

13.1. Modifications of insurance contracts

An insurance contract may be modified, either by agreement between the parties or as result of regulation. If the terms are modified, an entity must derecognise the original insurance contract and recognise the modified contract as a new contract, if and only if, any of the conditions listed below are satisfied.⁴⁵³

- If the modified terms were included at contract inception:
 - The modified contract would have been excluded from the scope of IFRS 17.
 - An entity would have separated different components from the host insurance contract (see section 5) resulting in a different insurance contract to which IFRS 17 would have applied.
 - The modified contract would have had a substantially different contract boundary (see section 9.1).
 - The modified contract would have been included in a different group of contracts at initial recognition (e.g., the contracts would have been onerous at initial recognition rather than having no significant possibility of being onerous subsequently) (see section 6).
- The original contract met the definition of an insurance contract with direct participation features, but the modified contract no longer meets that definition or vice versa.
- The entity applied the premium allocation approach (see section 10) to the original contract, but the modifications mean that the contract no longer meets the eligibility criteria for that approach.

In summary, any contract modification that changes the accounting model or the applicable standard for measuring the components of the insurance contract, is likely to result in derecognition.

If a contract modification meets none of the conditions above for derecognition, the entity should treat any changes in cash flows caused by the modification as changes in the estimates of the fulfilment cash flows.⁴⁵⁴

⁴⁵² IFRS 17.B25.

⁴⁵³ IFRS 17.72.

⁴⁵⁴ IFRS 17.73.

In practical terms, this means that an entity will need to determine whether the change in the estimate of the fulfilment cash flows arising from the modification is a past service event (which affects profit or loss in the current period) or a future service event (which affects the contractual service margin). For contracts applying the premium allocation approach any adjustments to premium receipts or insurance acquisition cash flows arising from a modification adjust the liability for remaining coverage and insurance revenue is allocated to the period for services provided (which would also require judgement in determining the period to which the modification applies). See 9.6, 10.4 and 12.3.3 above for the accounting for changes in the fulfilment cash flows.

The exercise of a right included in the terms of a contract is not a modification.⁴⁵⁵ This includes the exercise of a right that could change the nature of the insurance contract. In February 2020, the IASB discussed a staff paper prepared on this issue as a result of feedback from respondents who stated that an accounting mismatch could arise from a contract that changes in nature over time. Such a contract could change its nature due to the policyholder exercising an option. An example of such a contract noted in the staff paper is a contract with a savings phase with profit sharing that provides the policyholder with an option to subsequently convert the account balance into an annuity at a guaranteed rate. At inception, that contract might meet the requirements to be accounted for under the variable fee approach. Subsequently, when the policyholder exercises the annuity option, the entity will still be required to continue applying the variable fee approach. In contrast, at inception of an annuity contract without a savings phase the entity would normally apply the general model.

The IASB staff observed that different respondents favoured different suggested ways of amending IFRS 17 issued in 2018 to address this matter such as to exclude cash flows generated from exercising some options from the contract boundary, providing an accounting election to separate some components of an insurance contract or other changes. In conclusion, the IASB agreed with the IASB staff recommendation not to amend IFRS 17 as the suggested changes touched on key aspects of IFRS 17 and the IASB staff believed these were likely to result in unintended consequences and some of the options suggested would significantly reduce comparability across entities and would increase the complexity of IFRS 17. In addition, the IASB agreed with the IASB staff decision to decline to provide further application guidance or educational material on the matter, as suggested by some respondents, on the grounds that such guidance could be disruptive at this stage of IFRS 17 implementation.⁴⁵⁶

Accounting for derecognition of a modified contract is discussed at 13.3 below.

⁴⁵⁵ IFRS 17.72.

⁴⁵⁶ IASB staff Paper 2F, Amendments to IFRS 17: Other topics raised by respondents to the Exposure Draft, IASB, February 2020, pp.7-8.

How we see it

The guidance on contract modification and derecognition under IFRS 17 is likely to result in differences from current practices applied under IFRS 4. In particular, derecognition of a contract can only happen from a modification or extinguishment, and not from the exercise of an option in a contract. This can lead to different accounting practices from those adopted currently for example for contracts that change their nature over time. A contract that is accounted for under the variable fee approach may have an accumulation phase, where the policyholder receives the returns from a pool of underlying items, and a payout phase, where the accumulated contract value is exchanged for a life contingent payout annuity at guaranteed rates. Because the option to take out the annuity was included in the original contract, the exercise of that option by the policyholder is not a modification. Therefore, when the contract moves into the payout annuity phase, it would not result in a derecognition of the accumulation contract and recognition of a new payout annuity contract. The contract would also continue to be accounted for under the variable fee approach. This is the case even though a contract that only contained a life contingent payout annuity would not meet the definition of a direct participating contract and would, therefore, be accounted for under the general model if it was issued separately.

13.2. Derecognition of insurance contracts

An insurance contract is derecognised when, and only when:⁴⁵⁷

It is extinguished, i.e., when the obligation specified in the insurance contract expires or is discharged or cancelled

Or

 Any of the conditions for modifications which result in derecognition are met (see 13.1)

The treatment of contract derecognition differs depending on which of the two scenarios above applies (See 13.3 below).

When an insurance contract is extinguished, the entity is no longer at risk and not required to transfer economic resources to satisfy the contract. Therefore, the settlement of the last claim outstanding on a contract does not necessarily result in derecognition of the contract per se, although it may result in the remaining fulfilment cash flows under a contract being immaterial. For derecognition to occur, all obligations must be discharged or cancelled. When an entity purchases reinsurance, it should derecognise the underlying insurance contracts are extinguished.⁴⁵⁸

⁴⁵⁷ IFRS 17.74. ⁴⁵⁸ IFRS 17.75.

13.3. Accounting for derecognition

IFRS 17 contains three different ways to treat the derecognition of a contract, depending on the circumstances.

The reclassification of balances previously recognised in other comprehensive income as a result of derecognition is discussed at 13.3.4 below.

13.3.1. Derecognition resulting from extinguishment

An entity derecognises an insurance contract from within a group of insurance contracts by applying the following requirements:⁴⁵⁹

- The fulfilment cash flows allocated to the group for both the liability for remaining coverage and the liability for incurred claims are adjusted to eliminate the present value of the future cash flows and risk adjustment for non-financial risk relating to the rights and obligations that have been derecognised from the group
- The contractual service margin of the group is adjusted for the change in fulfilment cash flows described above, to the extent required by the general model, as discussed at sections 9.6 (for contracts without direct participation features) and 12.3 (for contracts with direct participation features
- The number of coverage units for expected remaining insurance contract services is adjusted to reflect the coverage units derecognised from the group, and the amount of the contractual service margin recognised in profit or loss in the period is based on that adjusted number to reflect services provided in the period (see 9.7 above).

In practice, contracts derecognised as a result of extinguishment should no longer have a contractual service margin (or liability for remaining coverage). In these circumstances, extinguishment will result in the elimination of any fulfilment cash flows for the liability for incurred claims with a corresponding adjustment to profit or loss. An entity might not know whether a liability has been extinguished because claims are sometimes reported years after the end of the coverage period. As a result, an entity might be unable to derecognise those liabilities. Ignoring contractual obligations that remain in existence and may generate valid claims would not give a faithful representation of an entity's financial position. However, it is expected that when the entity has no information to suggest there are unasserted claims on a contract with an expired coverage period, the entity would measure the insurance contract liability at a very low amount. Accordingly, there may be little practical difference between recognising an insurance liability measured at a very low amount and derecognising the liability.⁴⁶⁰

13.3.2. Derecognition resulting from transfer

When an entity derecognises an insurance contract because it transfers the contract to a third party, the entity should:⁴⁶¹

 ⁴⁵⁹ IFRS 17.76.
 ⁴⁶⁰ IFRS 17.BC322.
 ⁴⁶¹ IFRS 17.77.

- Adjust the fulfilment cash flows allocated to the group for the rights and obligations that have been derecognised, as discussed at 13.3.1 above
- Adjust the contractual service margin of the group from which the contract has been derecognised for the difference between the change in the contractual cash flows resulting from derecognition and the premium charged by the third party (unless the decrease in fulfilment cash flows is allocated to the loss component of the liability for remaining coverage).

If there is no contractual service margin to be adjusted, then the difference between the fulfilment cash flows derecognised and the premium charged by the third party is recognised in profit or loss.

13.3.3. Derecognition resulting from modification

When an entity derecognises an insurance contract and recognises a new insurance contract as a result of a modification described in 13.1 above, the entity should:⁴⁶²

- Adjust the fulfilment cash flows allocated to the group relating to the rights and obligations that have been derecognised, as discussed in 13.3.1 above
- Adjust the contractual service margin of the group, from which the contract has been derecognised for the difference between the change in the contractual cash flows resulting from derecognition and the hypothetical premium the entity would have charged, had it entered into a contract with terms equivalent to the new contract at the date of the contract modification, less any additional premium charged for the modification (unless the decrease in fulfilment cash flows is allocated to the loss component of the liability for remaining coverage)

And

Measure the new contract recognised assuming the entity received the hypothetical premium that it would have charged, had it entered into the modified contract at the date of the contract modification

Illustration 71 - Contract derecognition resulting from modification

An entity modifies an insurance contract issued such that the modified contract would have been included in a different group of contracts and, applying the guidance in IFRS 17, determines that the contract should be derecognised and replaced by a new contract. The original contract was part of a group of insurance contracts that was not onerous. The group of contracts that the modified contract joins is also not onerous.

At the date of modification, the fulfilment cash flows of the contract were CU100 and the additional premium received at that date for the contract modification is CU20. The entity estimates that a hypothetical premium that it would have charged had it entered into the modified contract at that date was CU112. The fulfilment cash flows of the newly recognised contract were CU105

⁴⁶² IFRS 17.77.

Illustration 71 – Contract derecognition resulting from modification (cont'd)

This gives rise to the following accounting entries:

	DR	CR
Cash	20	
Derecognition of fulfilment cash flows in the group from which the contract is derecognised	100	
Adjustment to contractual service margin of the group from which the modified contract is derecognised (20 + 100 - 112)		8
Recognition of fulfilment cash flows of modified contract		105
Addition to the contractual service margin of the group that the modified contract joins (112 – 105)		7

Frequently asked questions

Question 13-1: Is a new contract recognised as a result of a modification accounted for similarly to contracts acquired in their settlement period applying paragraph B5 of IFRS 17 and how are the coverage units identified? [TRG meeting April 2019 – Agenda paper no. 2, Log S82]

The IASB staff clarified that when an entity recognises new contracts that are in their settlement period, as a result of a modification that results in a derecognition of an existing contract, and which, therefore, cover events that have already occurred but the financial effect of which is uncertain, the insured event is the determination of the ultimate cost of the claims. This means that an entity recognises a liability for remaining coverage rather than a liability for incurred claims. See section 14.2 below.

How we see it

Determining any hypothetical premium will require the exercise of judgement by the reporting entity. This judgement may require input from an entity's pricing information and may place higher demands on data and systems. The estimate of the hypothetical premium is also a key input in determining the derecognition effect that will be adjusted against the contractual service margin of the original group of contracts and the contractual service margin that the newly recognised contract will add to the group of contracts of which it becomes a part.

13.3.4. Reclassification adjustments arising from derecognition

When an entity transfers a group of insurance contracts, or derecognises an insurance contract because it either transfers that contract to a third party (see 13.3.2 above), or derecognises the insurance contract and recognises a new insurance contract (see 13.3.3 below), it must:⁴⁶³

- For insurance contracts without direct participation features or contracts with direct participation features where the entity does not hold the underlying items, reclassify to profit or loss as a reclassification adjustment any remaining amounts for the group (or contract) that were previously recognised in other comprehensive income as a result of its accounting policy choice, if any, to disaggregate the finance income or expenses of a group of insurance contracts (see 15.3.2 below)
- Or
- For insurance contracts with direct participation features contracts where the entity holds the underlying item (i.e. it applies the current book yield approach), not reclassify to profit or loss, as a reclassification adjustment, any remaining amounts for the group (or contract) that were previously recognised in other comprehensive income as a result of its accounting policy choice, if any, to disaggregate the finance income or expenses of a group of insurance contracts (see 15.3.4 below).

13.3.5. Contracts applying the premium allocation approach that are derecognised

IFRS 17 does not contain guidance on how contracts accounted for under the premium allocation approach (see 10 above) should apply the requirements at 15.3.1 to 15.3.3 above in circumstances in which the derecognised contracts are part of a group which has a liability for remaining coverage but no separate contractual service margin (as a contractual service margin is not recognised separately under the premium allocation approach).

⁴⁶³ IFRS 17.91.

13.4. Derecognition of assets for insurance acquisition cash flows paid before the related group of insurance contracts is recognised as an asset

An entity should derecognise an asset recognised for insurance acquisition cash flows paid before the related group of insurance contracts is recognised as an asset when the insurance acquisition cash flows allocated to the group of insurance contracts are included in the measurement of the group. The derecognition should be allocated against the contractual margin and not taken to profit or loss unless the contract is onerous (see 9.8 above).⁴⁶⁴

If an entity recognises in a reporting period only some of the insurance contracts expected to be included in the group, the entity should determine the related portion of an asset for insurance acquisition cash flows for the group on a systematic and rational basis considering the expected timing of recognition of contracts in the group. The entity should derecognise that portion of the asset and include it in the measurement of a group of insurance contracts as above.⁴⁶⁵ In this situation it would also be necessary to perform an impairment test on any remaining asset for acquisition cash flows that relates to the group (see 9.10 above).

 ⁴⁶⁴ IFRS 17.28C.
 ⁴⁶⁵ IFRS 17.28C.

14. Acquisition of insurance contracts

Insurance contracts may be acquired in a transfer (often referred to as a portfolio transfer) or in a business combination, as defined in IFRS 3.

In summary, insurance contracts acquired in a transfer or a business combination are classified and measured in the same way as those issued by the entity at the date of the combination or transfer, except that the fulfilment cash flows are recognised at the date of the combination or transfer. IFRS 3 requires a group of insurance contracts acquired in a business combination to be measured at the acquisition date under IFRS 17 rather than at fair value.⁴⁶⁶

This results in the following key differences for insurance contracts acquired in a business combination within the scope of IFRS 3 compared with the accounting used previously under IFRS 4:

- Contracts acquired in a business combination within the scope of IFRS 3 after the date of initial application of IFRS 17 (i.e., accounting periods beginning on or after 1 January 2023) are classified as insurance contracts based on the contractual terms, economic conditions, operating or accounting policies and other pertinent factors and conditions as they exist at the acquisition date.⁴⁶⁷ Previously, when IFRS 4 applied, IFRS 3 contained an exception from this requirement for insurance contracts and stated that insurance contracts acquired in a business combination within its scope should be classified on the basis of the contractual terms and other factors at the inception of the contract rather than at the date of acquisition. Other assessments like the eligibility for the premium allocation approach or variable fee approach for direct participation contracts should be based on the contractual terms and conditions at the date of acquisition.
- Contracts acquired in a transfer that is not a business combination are classified as insurance contracts based on the contractual terms, economic conditions, operating or accounting policies and other pertinent factors and conditions as they exist at the acquisition date (i.e., there is no transitional relief - see 17.2 below).
- Contracts are measured under the IFRS 17 requirements, rather than at fair value. Consequently, no option is available to split the value of the acquired insurance contracts into two components, as was permitted under IFRS 4 (i.e., between a liability in accordance with the insurer's accounting policies and an intangible asset representing the difference between fair value and the value of that liability under the IFRS 17 measurement model).

IFRS 17 does not explicitly state that contracts acquired in a business combination within the scope of IFRS 3 should be classified based on the contractual terms and conditions as they exist at the acquisition date. However, neither do other standards in similar circumstances. The amendments to IFRS 3 which apply upon the application of IFRS 17 are clear that, in a business combination, an entity is required to classify contracts (i.e., assess whether a contract transfers significant insurance risk or is an investment contract with discretionary participation features) based on the contractual terms and other

⁴⁶⁶ IFRS 3.31A.

⁴⁶⁷ IFRS 3.15, 64N.

factors at the date of acquisition rather than the original inception date of the contract. $^{\rm 468}$

When considering feedback from entities implementing IFRS 17, the Board considered but rejected a suggestion to reinstate the previous IFRS 4 exception in IFRS 3. In the Board's view, by removing the exception, IFRS 17 makes the accounting for the acquisition of insurance contracts consistent with the accounting for acquisitions of other contracts acquired in a business combination. The Board was not persuaded by the argument that applying the requirement will result in differences in accounting between an acquirer's consolidated financial statements and an acquiree's financial statements. In the Board's view, differences in accounting between an acquirer's financial statements and an acquiree's financial statements depict differences arising from the economics of the acquisition, they are not unique to insurance contracts and are not unusual when applying IFRS Standards. Those differences reflect changes in facts and circumstances at the acquisition date compared to facts and circumstances at the date the acquiree recognised the contracts. In addition, differences between an acquirer's financial statements and an acquiree's financial statements can arise for other reasons, for example, because of the elimination of intragroup transactions.⁴⁶⁹

IFRS 17 requires an entity to treat the consideration received or paid for insurance contracts acquired in a transfer of business or a business combination within the scope of IFRS 3, including contracts in their settlement period, as a proxy for the premiums received. This means that the entity determines the contractual service margin in accordance with all other requirements of IFRS 17 in a way that reflects the premium paid for the contracts. In a business combination within the scope of IFRS 3, the consideration received or paid is the fair value of the contracts at that date. However, IFRS 17 states that the entity does not apply the requirement in IFRS 13 *Fair Value Measurement* and that the fair value of a financial liability with a demand feature cannot be less than the amount payable on demand, discounted from the first date that the amount could be required to be paid.⁴⁷⁰

The consideration received or paid for the contracts excludes the consideration received or paid for any other assets or liabilities acquired in the same transaction. Therefore, an acquirer will have to allocate the consideration received or paid between contracts within the scope of IFRS 17, other assets and liabilities outside the scope of IFRS 17 and goodwill, if any.⁴⁷¹

For insurance contracts measured using the general model, including the variable fee approach, on initial recognition (i.e., acquisition) the contractual service margin is calculated:⁴⁷²

- For acquired insurance contracts issued based on the requirements of the general model (see 9 above)
- For acquired reinsurance contracts held based on the requirements of the general model as modified (see 11 above) using the consideration received

⁴⁶⁸ Insurance contracts: Responding to the external editorial review, IASB staff paper 2C, February 2017, Issue A12.

⁴⁶⁹ IFRS 17.BC327B-C.

⁴⁷⁰ IFRS 17.B94.

⁴⁷¹ IFRS 17.B94.

⁴⁷² IFRS 17.B95.

or paid for the contracts as a proxy for the premiums received or paid at the date of initial recognition

If the premium allocation approach applies to insurance contracts acquired in a transfer or business combination then the premium received is the initial carrying amount of the liability for remaining coverage and the liability for incurred claims.⁴⁷³ If facts and circumstances indicate that the contract is onerous, the difference between the carrying amount of the liability for remaining coverage and the fulfilment cash flows that relate to the remaining coverage should be treated the same way as a contract under the general model (i.e. recognised within goodwill or the gain on bargain purchase in a business combination or recognised as a loss in profit or loss on a transfer).

If the acquired insurance contracts issued are onerous:⁴⁷⁴

For contracts acquired in a business combination within the scope of IFRS 3, the excess of the fulfilment cash flows over the consideration paid or received should be recognised as part of goodwill or the gain on a bargain purchase

Or

For contracts acquired in a transfer, the excess of the fulfilment cash flows over the consideration paid or received is recognised as a loss in profit or loss. The entity should establish a loss component of the liability for remaining coverage for that excess (i.e., the onerous group) and apply the guidance discussed at 8.8 above to allocate subsequent changes in fulfilment cash flows to that loss component.

For a group of reinsurance contracts held when the underlying insurance contracts issued are onerous and a loss-recovery component has been recognised, an entity shall determine the loss-recovery component of the asset for remaining coverage at the date of transaction by multiplying:⁴⁷⁵

- The loss component of the liability for remaining coverage of the group of underlying insurance contracts at the date of transaction
- The percentage of claims on the underlying insurance contracts the entity expects at the date of transaction to recover from the group of reinsurance contracts held

Any loss-recovery component determined above is part of goodwill or the gain on a bargain purchase for reinsurance contracts held acquired in a business combination within the scope of IFRS 3, or as income in profit or loss for contracts acquired in a transfer.⁴⁷⁶

At the date of the transaction, onerous underlying insurance contracts might be included in a group of insurance contracts with other onerous contracts not covered by the group of reinsurance contracts held. In that situation, for the purposes of applying the requirements above, the entity must use a systematic and rational allocation basis to determine the portion of the loss component of

⁴⁷³ IFRS 17.B94.

⁴⁷⁴ IFRS 17.B95A.

⁴⁷⁵ IFRS 17.B95B.

⁴⁷⁶ IFRS 17.B95C.

the group of insurance contracts that relates to insurance contracts covered by the group of reinsurance contracts held. $^{\rm 477}$

Investment contracts within the scope of IFRS 9 are required to be measured at fair value when acquired in a business combination.

The two following examples, based on Illustrative Examples 13 and 14 of IFRS 17, demonstrate the measurement on initial recognition for insurance contracts acquired:

Illustration 72 – Measurement on initial recognition of insurance contracts acquired in a transfer that is not a business combination [Based on example 13 in the Illustrative Examples to IFRS 17, IE139-145]

An entity acquires insurance contracts in a portfolio transfer from another entity. The seller pays CU30 to the entity to take on those insurance contracts. The entity determines that the acquired contracts form a group, as if it had entered into the contracts on the date of the transaction. The entity applies the general model to the measurement of the insurance contracts.

On initial recognition, the entity estimates that the fair value (i.e., deemed premium) of the group of insurance contracts is CU30 and the fulfilment cash flows are, as follows:

- Example A outflow (or liability) of CU20
- Example B outflow (or liability) of CU45.

For simplicity, this example ignores all other amounts.

The consideration of CU30 received from the seller is a proxy for the fair value of the group of contracts. Consequently, on initial recognition, the entity measures the liability for the group of contracts, as follows:

	Example A	Example B
	CU	CU
Fulfilment cash flows	20	45
Contractual service margin	10	-
Insurance contract liability on initial recognition	30	45
The effect on profit or loss will be:		
'Profit (loss) on initial recognition'		(15)

For contracts that are not onerous, the contractual service margin is the difference between the premium and the fulfilment cash flows (i.e., CU30 less CU20 resulting in a contractual service margin of CU10 in Example A). Consequently, in Example A, the total insurance contract liability is equal to the premium received.

In Example B, the premium received (CU30) is less than the fulfilment cash flows (CU45). Therefore, the entity concludes that the contract is onerous. Consequently, the difference between CU30 and CU45 (CU15) is an expense in profit or loss and the insurance contract liability is equal to the fulfilment cash flows. The entity also establishes a loss component of CU15.

⁴⁷⁷ IFRS 17.B95D.

Illustration 73 – Measurement on initial recognition of insurance contracts acquired in a business combination [Based on example 14 in the Illustrative Examples to IFRS 17, IE146-151]

An entity acquires insurance contracts as part of a business combination within the scope of IFRS 3 and estimates that the transaction results in goodwill when it applies IFRS 3. The entity determines that the acquired contracts form a group, as if it had entered into the contracts on the date of the transaction. The entity applies the general model to the measurement of the insurance contracts.

On initial recognition, the entity estimates that the fair value (i.e., deemed premium) of the group of insurance contracts is CU30 and the fulfilment cash flows are, as follows:

- Example A outflow (or liability) of CU20
- Example B outflow (or liability) of CU45.

For simplicity, this example ignores all other amounts.

The consideration of CU30 received from the seller is a proxy for the fair value of the group of contracts. Consequently, on initial recognition, the entity measures the liability for the group of contracts, as follows:

	Example A	Example B
	CU	CU
Fulfilment cash flows	20	45
Contractual service margin	10	-
Insurance contract liability on initial recognition	30	45
The effect on profit or loss will be:		
'Profit (loss) on initial recognition'	-	-

In Example A, the entity measures the contractual service margin as the difference between the deemed premium (CU30) and the fulfilment cash flows (CU20). Consequently, in Example A the contractual service margin is CU10 and the total insurance contract liability is equal to the deemed premium.

In Example B, the fulfilment cash flows exceed the deemed premium. Consequently, the contractual service margin is zero and the excess of the fulfilment cash flows (CU45) over the deemed premium (CU30) is an adjustment against goodwill since there cannot be a loss on initial recognition of a business combination. The entity also establishes a loss component of CU15.

How we see it

- When insurance contracts issued or reinsurance contracts held are acquired in a transfer of insurance contracts that does not form a business, or in a business combination within the scope of IFRS 3, an entity should also apply the aggregation requirements for the identification of portfolios of insurance contracts and divide those into groupings, as explained at 5 above, as if it had entered into the contracts on the date of transaction. This implies that contract classifications and eligibility assessments relevant to such acquired contracts (i.e., significant insurance risk, direct participation features, eligibility for the premium allocation approach) are based on the terms and conditions at the acquisition date.
- As IFRS 3 also refers to 'groupings' and 'operating and accounting policies', this implies that other assessments like the eligibility for the premium allocation approach or variable fee approach for direct participation contracts (see 10.1 and 12.3.1 above) should be based on the contractual terms and conditions at the date of acquisition rather than at the date of the original inception of the contract. This approach may result in, for example, contracts that are insurance contracts of the acquiree being investment contracts of the acquirer. Consequently, there will be a different accounting treatment between the consolidated financial statements that includes the acquiree and the separate financial statements of the acquiree. However, this would reflect the substance that the acquirer has purchased investment contracts rather than insurance contracts.

14.1. Assets for insurance acquisition cash flows acquired in a business combination within the scope of IFRS 3 or a transfer

The asset for insurance acquisition cash flows should be excluded from in the measurement of insurance contracts acquired in a business combination within the scope of IFRS 3 or in a transfer of insurance contracts that do not form a business.⁴⁷⁸

However, when an entity acquires insurance contracts in a transfer of insurance contracts that do not form a business or in a business combination within the scope of IFRS 3, the entity should recognise an asset for insurance acquisition cash flows at fair value at the date of transaction for the rights to obtain:⁴⁷⁹

- Future insurance contracts that are renewals of insurance contracts recognised at the date of transaction
- Future insurance contracts, other than those above, after the date of the transaction without paying again insurance acquisition cash flows the acquiree has already paid that are directly attributable to the related portfolio of insurance contracts.

⁴⁷⁸ IFRS 17.B95F.

⁴⁷⁹ IFRS 17.B95E.

These insurance acquisition cash flow assets recognised for the rights to obtain future insurance contracts are excluded from the scope of IAS 38.⁴⁸⁰

IFRS 17, as issued in May 2017, did not specify any requirements in respect of assets for insurance acquisition cash flows acquired in a transfer or business or business combination. The IASB concluded that requiring an entity to recognise assets for insurance acquisition cash flows for rights to obtain future insurance contracts and future renewals at the acquisition date ensures that the contractual service margin of groups of insurance contracts the entity recognises subsequent to the acquisition appropriately reflect the rights the entity paid for relating to those future groups as part of the consideration for the acquisition. Requiring an entity to recognise any such assets at the acquisition date is consistent with the other requirements in IFRS 17 for recognising an asset for insurance acquisition cash flows (see 7.3 above). The Board decided that to achieve that consistency, it is necessary to determine the rights described in the first bullet point above by reference to insurance acquisition cash flows the acquiree has already paid. Otherwise broader rights to obtain future contracts from intangible assets such as customer relationships, unconnected to any previously paid insurance acquisition cash flows, could be included in the insurance acquisition cash flow assets. In contrast, the Board decided that such reference is not needed to determine the rights described in the subsequent bullet point above. The fact that these rights relate only to renewals means they are sufficiently constrained.⁴⁸¹

14.2. Subsequent treatment of contracts acquired in their settlement period

For retroactive insurance contracts that cover events that have already occurred, but for which, the financial effect is uncertain, IFRS 17 states that the insured event is the determination of the ultimate costs of the claim.⁴⁸² As the claim has occurred already, the question arises as to how insurance revenue and insurance service expense should be presented for these insurance contracts when they are acquired in a business combination or similar acquisition in their settlement period. More specifically, whether insurance revenue should reflect the entire expected claims or not.

In February 2018, this question was submitted to the TRG and the IASB staff stated that acquiring contracts in their settlement period is essentially providing coverage for the adverse development of claims. Therefore, the settlement period for the entity that issued the original contract becomes the coverage period for the entity that acquires the contracts. As such, contracts acquired in their settlement period will be considered part of the liability for remaining coverage for the entity that acquired the contract and not part of the liability for incurred claims. Accordingly, insurance revenue would reflect the entire expected claims as the liability for remaining coverage reduces because of services provided. If some cash flows meet the definition of an investment component, they will not be reflected in insurance revenue or insurance service expenses.

⁴⁸⁰ IAS 38.3(g).
⁴⁸¹ IFRS 17.BC327I.
⁴⁸² IFRS 17.B5.

This results in entities accounting differently for similar contracts, depending on whether the contracts are issued by the entity or whether the entity acquired those contracts in their settlement period. The most notable outcomes of this distinction include:

- An entity applies the general model for contracts acquired in their settlement period, because the period over which claims could develop is longer than one year whilst the entity would expect to apply the premium allocation approach for similar contracts that it issues
- An entity recognises revenue for the contracts acquired in their settlement period over the period the claims can develop, while revenue is no longer recognised over this period for similar contracts issued

In May 2018, in response to a TRG submission, the IASB staff further clarified that, for contracts acquired in their settlement period, claims are incurred (and, hence, the liability for remaining coverage is reduced) when the financial effect becomes certain. This is not when the entity has a reliable estimate if there is still uncertainty involved. Conversely, this is not necessarily when the claims are paid if certainty has been achieved prior to the actual payment. Additionally, for contracts acquired in their settlement period where the liability for remaining coverage is determined to have nil contractual service margin at initial recognition (i.e., insurance contracts are measured at zero with nil contractual service margin) and estimates of future cash flows decrease subsequently (i.e., positive fulfilment cash flows), the IASB staff stated that a contractual service margin larger than zero may be recognised post acquisition.

The TRG members had no specific comments on the IASB staff observations although the TRG members had previously observed that the requirements reflect a significant change from existing practice and this change results in implementation complexities and costs. In May 2018, the IASB staff prepared an outreach report which included implementation concerns regarding the subsequent treatment of insurance contracts acquired in their settlement period. However, the IASB declined to create an exception to the general classification and measurement requirements in IFRS 17 for contracts acquires a contract should, at the acquisition date, apply the requirements for identifying whether a contract has an insured event and meets the definition of an insurance contract, just as an entity that issues a contract applies the requirement at the issue date.⁴⁸³

Some contracts acquired in their settlement period will not meet the definition of an insurance contract at the acquisition date. This is because, in some circumstances, all claim amounts are known at the acquisition date but remain unpaid. In such circumstances, the acquirer is not providing insurance coverage, the contract does not meet the definition of an insurance contract and the acquirer would account for the contract as a financial liability applying IFRS 3 and subsequently IFRS 9. The Board also observed that for contracts that meet the definition of an insurance contract at the acquisition date, an entity would need to consider whether any amounts payable to the policyholder

⁴⁸³ IFRS 17.BC327E.

meet the definition of an investment component (and are therefore excluded from insurance revenue).⁴⁸⁴

However, the IASB amended IFRS 17 to provide transitional relief for the settlement of claims incurred before an insurance contract is acquired when the modified retrospective approach or the fair value approach is used (see 17.4 and 17.5 below). Furthermore, the IASB also provided transition relief that allows entities to continue to apply their previous IFRS 4 classification of contracts acquired in a business combination before the date of initial application of IFRS 17 (see 17.2.1.C below).

14.3. Business combinations under common control

IFRS 3 does not apply to a combination of entities or businesses under common control (i.e., a common control business combination).⁴⁸⁵

Similarly, IFRS 17 limits the accounting requirements in respect of business combinations (discussed at 14 above) to a 'business combination in the scope of IFRS 3'. This requirement excludes business combinations outside the scope of IFRS 3, such as business combinations under common control, from the specific requirements of IFRS 17 for determining the contractual service margin for insurance contracts acquired in a transfer of insurance contracts or a business combination. IFRS 17, as issued in 2017, did not mention common control business combinations as such and the requirements for accounting for business combinations were stated to apply to a 'business combination' without any qualification.⁴⁸⁶

How we see it

Business combinations under common control are outside the scope of IFRS 17. Consequently, an entity will need to develop an appropriate accounting policy for business combinations under common control. Currently, there is no guidance in IFRS Standards for business combinations under common control, i.e., transactions in which the combining businesses are ultimately controlled by the same party both before and after the combination. The International Accounting Standards Board (the Board) has published a discussion paper, which includes proposed reporting requirements for such transactions. The Board's objective is to reduce diversity in practice and improve comparability and transparency.

14.4. Portfolio transfers- practical issues

14.4.1. The difference between a business combination and a transfer

When an entity acquires a portfolio of insurance contracts, the main accounting consideration is to determine whether that acquisition meets the definition of a

⁴⁸⁴ IFRS 17.BC327G.
⁴⁸⁵ IFRS 3.2(c).
⁴⁸⁶ IFRS 17.BC327A.

business. IFRS 3 defines a business as 'an integrated set of activities and assets that is capable of being conducted and managed for the purpose of providing goods or services to customers, generating investment income (such as dividends, or interest) or generating other income from ordinary activities'.⁴⁸⁷ The application guidance to IFRS 3 notes that a business consists of inputs and processes applied to those inputs that have the ability to contribute to the creation of outputs. Although businesses usually have outputs they are not required for an integrated set of assets and activities to be a business.⁴⁸⁸ Where it is considered that a business is acquired, goodwill may need to be recognised, as may deferred tax liabilities, in respect of any acquired intangibles. For an isolated transfer, neither goodwill nor deferred tax should be recognised.

Rights to issue or renew contracts in the future (as opposed to existing insurance contracts) are separate intangible assets and the accounting for the acquisition of such rights is discussed at 14.4.3 below.

An entity should recognise an asset at fair value for insurance acquisition cash flows that relate to future insurance contracts and future renewals acquired in a transfer that is not a business as discussed at 14.1 above.

How we see it

The determination of whether a portfolio of contracts or a business has been acquired will be a matter of judgement based on the facts and circumstances. Acquisitions of contracts that also include the acquisition of underwriting systems and/or the related organised workforce are more likely to meet the definition of a business than merely the acquisition of individual or multiple contracts.

14.4.2. Deferred taxation

For transactions that meet the definition of a business combination , IAS 12 requires deferred tax to be recognised in respect of temporary differences arising in business combinations, for example if the tax base of the asset or liability remains at cost when the carrying amount is fair value. IFRS 17 contains no exemption from these requirements. Therefore, deferred tax will often arise on temporary differences created by the recognition of insurance contracts at a value different from that applied previously by the acquiree (e.g., because the fulfilment cash flows at the date of acquisition for the insurance contracts acquired, calculated on the basis of the contractual terms at the date of the acquisition, is different from the carrying value of the fulfilment cash flows calculated by the acquiree on the basis of contractual terms on initial recognition of the insurance contract). The deferred tax adjusts the amount of goodwill recognised. For transactions that do not meet the definition of a business combination, the initial recognition exemption applies and no deferred tax is recognised on initial recognition (as discussed at 14.4.1 above).

⁴⁸⁷ IFRS 3 Appendix A.

⁴⁸⁸ IFRS 3.B7 8.

14.4.3. Customer lists and relationships not connected to insurance contracts

The requirements discussed at 164above apply only to insurance contracts that exist at the date of a business combination or transfer and the requirements discussed at 13.1 above apply to insurance acquisition cash flows related for the rights to obtain future insurance contracts.

Therefore, they do not apply to customer lists and customer relationships reflecting the expectation of future insurance contracts <u>and related insurance</u> <u>acquisition cash flows</u> that do not meet the IFRS 17 recognition criteria. IAS 36 and IAS 38 apply to such transactions as they apply to other intangible assets.

The following example deals with customer relationships acquired together with a portfolio of one-year motor insurance contracts.

Illustration 74 – Purchase of portfolio of one-year motor insurance contracts

Parent A obtained control of insurer B in a business combination on 31 December 2023. B has a portfolio of one-year motor insurance contracts that policyholders may cancel annually.

Because Insurer B establishes its relationships with policyholders through insurance contracts, the customer relationship with the policyholders meets the contractual-legal criterion for recognition as an intangible asset. IAS 36 and IAS 38 apply to the customer relationship intangible asset.⁴⁸⁹

489 IFRS 3.IE30(d.)

15.Presentation

IFRS 17 specifies minimum amounts of information that need to be presented on the face of the statement of financial position and statement of financial performance. These are supplemented by disclosures to explain the amounts recognised on the face of the primary financial statements (see section 16 below).

IFRS 17 requires separate presentation of amounts relating to insurance contracts issued and reinsurance contracts held in the primary statements. There is nothing to prevent an entity from providing further sub-analysis of the required line items (which may make the relationship of the reconciliations to the face of the statement of financial position more understandable). Indeed, IAS 1 *Presentation of Financial Statements* requires presentation of additional line items (including the disaggregation of line items specifically required), headings and subtotals on the face of the statements of financial position and financial performance when such presentation is relevant to an understanding of the entity's financial position or financial performance.⁴⁹⁰

15.1. Statement of financial position

For presentation in the statement of financial position, IFRS 17 and IAS 1 require insurance contracts to be aggregated by portfolios and presented separately, as follows:⁴⁹¹

- Insurance contracts issued that are assets
- Insurance contracts issued that are liabilities
- Reinsurance contracts held that are assets
- Reinsurance contracts held that are liabilities

A portfolio is a group of insurance contracts that are subject to similar risks and managed together (see 6.1 above).⁴⁹²

The requirement to present insurance contracts assets and liabilities at a portfolio level provides significant operational relief and does not significantly diminish the usefulness of information compared to a requirement to present assets and liabilities at a group of insurance contract level.⁴⁹³

Any assets or liabilities for insurance acquisition cash flows (see 7.3 above) and any other assets or liabilities for cash flows related to a group of contracts that occur before the group is recognised are subsumed in the carrying amount of the related portfolios of insurance contracts issued, and any other assets or liabilities for cash flows related to portfolios of reinsurance contracts held are subsumed in the carrying amount of the portfolios of reinsurance contracts held.⁴⁹⁴

There is no requirement for disclosure of balances on respect of the general model, premium allocation approach, or variable fee approach to be shown

⁴⁹⁰ IAS 1.54-56, 82-86.

⁴⁹¹ IFRS 17.78, IAS 1.54(da) and 54(ma).

⁴⁹² IFRS 17.14.

⁴⁹³ IFRS 17.BC330B.

⁴⁹⁴ IFRS 17.79.

separately on the face of the statement of financial position. Nor is there a requirement for the components of the balances (such as the contractual service margin or the risk adjustment for non-financial risk) to be presented separately on the face of the statement of financial position.

However, an entity should disclose reconciliations in the notes to the financial statements that show how the amounts disclosed on the face of the statement of financial position (i.e., the net carrying amount of contracts within the scope of IFRS 17) changed during the reporting period because of cash flows and income and expenses recognised in the statement of financial performance. Separate reconciliations are required for insurance contracts issued and reinsurance contracts held.⁴⁹⁵ The detailed requirements of these reconciliations are required for contracts subject to the general model and the premium allocation approach together with reconciliations for the individual components of these reconciliations necessary to meet the overall disclosure objectives of the disclosure requirements of IFRS 17.⁴⁹⁶

Applying IFRS 4, some entities presented separately in the statement of financial position different amounts arising from an insurance contract, as if those different amounts were separate assets or liabilities. For example, some entities presented line items labelled as premiums receivable, claims payable and deferred acquisition costs separately from the insurance contract liability. Different entities presented different line items and had different definitions of what those line items were (for example, some entities presented as premiums receivable amounts that were not yet billed while other entities presented only billed amounts that remain outstanding). Some stakeholders expressed the view that they would like to continue that practice of further disaggregation because they view such disaggregated line items as providing meaningful information to users of financial statements. However, the Board disagreed with this approach to presentation because it could result in the presentation of amounts that are not separable assets or liabilities. For example, premiums receivable for future coverage is not a gross asset separable from the related liability for the future coverage.⁴⁹⁷ IAS 1 permits the presentation of additional line items (including by disaggregation of line items), headings and subtotals in the statement of financial position when such presentation is relevant to an understanding of the entity's financial position.498

The Board also considered some stakeholders' suggestions that entities should be permitted to present one insurance contract asset or liability for all insurance contracts issued by the entity (that is, present insurance contracts at an entity level). The Board rejected that suggestion because that would risk an unacceptable loss of useful information for users of financial statements.⁴⁹⁹

⁴⁹⁵ IFRS 17.98.

⁴⁹⁶ IFRS 17.95.

⁴⁹⁷ IFRS 17.BC330D.
⁴⁹⁸ IAS 1.55.
⁴⁹⁹ IFRS 17.BC330C.
In addition, the statement of financial position should include, among others, line items that present the following amounts, including those that back policyholder liabilities:⁵⁰⁰

- Investment property
- Intangible assets
- Financial assets, with separate presentation of trade and other receivables and cash and cash equivalents
- Financial liabilities, with separate presentation of trade and other payables
- Liabilities and assets for current tax, as defined in IAS 12
- Deferred tax liabilities and deferred tax assets, as defined in IAS 12

How we see it

- The presentation requirements are significantly different from those required by IFRS 9 for financial instruments. They are also likely to differ significantly from any presentation applied previously by an insurer under IFRS 4. For example, individual positive and negative contract balances with different counterparties within one portfolio are aggregated (netted) on the statement of financial position.
- All rights and obligations arising from an insurance contract are included in the presentation of the portfolio on a net basis, unless the components of the contract are separated and accounted for under a different IFRS (see 6.1.1 above). The rights and obligations presented net would include all related non-distinct elements, for example, policyholder loans, insurance premiums receivable, liabilities for incurred claims and insurance acquisition cash flows that have been included in the measurement of the contractual service margin.
- The fulfilment cash flows of an insurer that is a mutual entity generally include the rights of policyholders to the whole of any surplus of assets over liabilities. This means that, for an insurer that is a mutual entity, there should, in principle, be no equity and no net comprehensive income reported in any accounting period. Mutual insurers may choose to present additional line items and sub totals on the face of their statement of financial position. This would distinguish amounts due to or from policyholders, in their capacity as policyholders, from amounts due to, or from, qualifying mutual policyholders (including future policyholders) in their capacity as holders of the most residual interest in the entity.

15.2. Statement of financial performance

An entity is required to disaggregate the amounts recognised in the statement of profit and loss and the statement of other comprehensive income (collectively, referred to in the standard as the statement of financial performance) into:⁵⁰¹

⁵⁰⁰ IAS 1.54. ⁵⁰¹ IFRS 17.80.

- Insurance service result comprised of:
 - Insurance revenue; and
 - insurance service expenses.
- Insurance finance income or expenses.

Income or expenses from reinsurance contracts held should be presented separately from the expenses or income from insurance contracts issued.⁵⁰² This presentation is also required by IAS 1^{503}

An entity may present the income or expense from a group of reinsurance contracts held, other than insurance finance income or expenses, as either:⁵⁰⁴

A single amount (net presentation)

Or

- Separately (gross presentation):
 - The amounts recovered from the reinsurer
 - An allocation of the premium paid

When the gross presentation for reinsurance held is used, an entity is not allowed to present the allocation of the reinsurance premiums paid as a reduction in revenue.⁵⁰⁵

Insurance finance income or expenses must be presented separately for insurance contracts issued and reinsurance contracts held on the face of the statement of profit or loss.⁵⁰⁶. When insurance finance income or expenses is disaggregated it must also be shown separately for insurance contracts issued and reinsurance contracts held in other comprehensive income, within items of other comprehensive income that will be classified subsequently to profit or loss when specific conditions are met.⁵⁰⁷

In addition, the profit or loss section or the statement of profit or loss shall include, among others, line items that present the following amounts for the period:⁵⁰⁸

- Revenue, presenting separately
- Interest revenue calculated using the effective interest method
- Insurance revenue
- Gains and losses arising from the derecognition of financial assets measured at amortised cost
- Finance costs
- Impairment losses (including reversals of impairment losses or impairment gains) determined in accordance with section 5.5 of IFRS 9

⁵⁰² IFRS 17.82.

⁵⁰³ IAS 1.82(a)(ii), (ab)-(ac).
⁵⁰⁴ IFRS 17.86.

⁵⁰⁵ IFRS 17.86(c).

⁵⁰⁶ IAS 1.82(bb)-(bc).

⁵⁰⁷ IAS 1.7(i)-(j).

⁵⁰⁸ IAS 1.82.

Tax expense, being the aggregate amount included in the determination of profit or loss for the period in respect of current tax and deferred tax

The following table illustrates a summary statement of financial performance under IFRS 17.

Illustration 75 – Illustrative statement of financial performance		
Statement of profit or loss and other comprehensive income	2021	2020
	CU'm	CU'm
Insurance revenue	10,304	8,894
Insurance service expenses	(9,069)	(8,489)
Insurance service results before reinsurance contracts held	1,235	405
Income (expenses) from reinsurance contracts held	(448)	(327)
Insurance service result	787	78
Insurance finance income or expenses from contracts issued within the scope of IFRS 17	394	353
Finance income or expenses from reinsurance contracts held	200	300
Net financial result	594	653
Profit before tax	1,381	731
Other comprehensive income		
Items that may be reclassified subsequently to profit or loss		
Insurance finance income or expenses from contracts issued within the scope of IFRS 17	50	(25)
Finance income or expenses from reinsurance contracts held	(25)	50
Other comprehensive income for the year net of tax	25	25
Total comprehensive income for the year	1,406	746

The following example illustrates the presentation of the insurance service result if the result from reinsurance contracts held is shown on a gross basis.

Chatamant of profit or loss and other		
comprehensive income	2021	2020
	CU'm	CU'm
Insurance revenue	10,304	8,894
Insurance service expenses	(9,069)	(8,489)
Insurance service results before reinsurance contracts held	1,235	405
Income (expenses) from reinsurance contracts held		
Amounts recovered from the reinsurer	300	200
Allocation of reinsurance premiums paid	(748)	(527)
Reinsurance held subtotal	(448)	(327)
Insurance service result	787	78

Illustration 76 - insurance service result if the result from reinsurance

There is nothing to prevent an entity from providing further sub-analysis of the components of the insurance service result (which may make the relationship of the reconciliations discussed at section 16.1 below to the face of the statement of financial performance more understandable). Indeed, IAS 1 states that an entity should present additional line items (including by disaggregating line items specified by the standard), headings and subtotals in the statement(s) presenting profit or loss and other comprehensive income when such presentation is relevant to an understanding of the entity's financial performance.⁵⁰⁹

The following diagram illustrates the high-level relationship of the movements in the building clocks of the general model (discussed at 8 above) and their relationship with the presentation in the statement of financial performance.

⁵⁰⁹ IAS 1.85



Each of the amounts required to be reported in the statement of financial performance are discussed at 15.2.1 to 15.2.3 below.

15.2.1. Insurance revenue

Insurance revenue depicts the provision of services arising from a group of insurance contracts at an amount that reflects the consideration to which the entity expects to be entitled in exchange for those services.⁵¹⁰

Insurance revenue from a group of insurance contracts is therefore the consideration for the contracts, i.e., the amount of premiums paid to the entity: 511

- Adjusted for financing effect (the time value of money)
- Excluding any investment components

Investment components are accounted for separately and are not part of the insurance service result.

The amount of insurance revenue recognised in a period depicts the transfer of promised services at an amount that reflects the consideration to which the entity expects to be entitled in exchange for those services. The total consideration for a group of contracts covers the following:⁵¹²

- Amounts related to the provision of services, comprising:
 - Insurance service expenses, excluding any amounts related to the risk adjustment for non-financial risk included below and any amounts allocated to the loss component of the liability for remaining coverage

⁵¹⁰ IFRS 17.83.

⁵¹¹ IFRS 17.B120.

⁵¹² IFRS 17.B121.

- Amounts related to income tax that are specifically chargeable to the policyholder
- The risk adjustment for non-financial risk, excluding any amounts allocated to the loss component of the liability for remaining coverage
- The contractual service margin
- Amounts related to insurance acquisition cash flows

Expected costs for insurance service expenses will be included in the fulfilment cash flows. For example, an entity might include building costs in the fulfilment cash flows (see 9.2.3 above). The entity will determine depreciation costs over the period of the useful life of the building applying the requirements of IAS 16. When these costs are incurred applying IAS 16, the entity will treat them as an incurred expense under IFRS 17, i.e., the entity will reduce the liability for remaining coverage and recognise revenue. An entity accounts for income tax applying IAS 12. When income tax expenses that are specifically chargeable to the policyholder under the terms of an insurance contract are recognised applying IAS 12, an entity recognises insurance revenue for the consideration paid by the policyholder for such income tax amounts when the entity recognises in profit or loss the income tax amounts. This means that when an entity incurs income tax expenses that are specifically chargeable to the policyholder under the terms of an insurance contract, the entity will need to reduce the liability for remaining coverage and recognise insurance revenue accordingly.⁵¹³ As IAS 1 requires as separate presentation of the tax expense, the related income tax amount incurred in the period is reported as part of the tax expense line item.⁵¹⁴

Illustration 77 – Interaction between IFRS 17 other IFRSs		
At 31 December 2023 (Q4/H2), Entity A recognised a liability for a group of insurance contracts on the face of its statement of financial position.		
Note: All other amounts apart from those mentioned below are ignored for simplicity.		
The fulfilment cash flows of the liability for remaining coverage a 31 December 2023 include the following:	ıt	
	CU	
Allocated depreciation of right-of-use asset expected to be incurred during 2024 1	218	
Expected income tax payment for 2024, chargeable to the policyholder	120	
¹ At 31 December Entity A has recognised a right-of-use asset (CU436) and a corresponding lease liability (CU446) related to the current lease contract as required by IFRS 16.		

⁵¹³ Amendments to IFRS 17 - Sweep issues, IASB staff paper 2, May 2020, p.6.

⁵¹⁴ IAS 1.82(d).

The actual expenses incurred during 2024 amount to:

J
20
18

The journal entries to account for the consequences of the actual expenses incurred within 2024 may be presented (assuming no differences between actual and expected expenses), as follows:

	CU	CU
DEPRECIATION Amortisation expense Right-of-use asset – accumulated amortisation Application of IFRS 16	218	218
Liability for remaining coverage Insurance revenue <i>Application of IFRS 17.41(a)</i>	218	218
Insurance service expenses Liability for incurred claims Application of IFRS 17.42(a)	218	218
Liability for incurred claims Amortisation expense Deemed settlement of liability for incurred claims when expense is incurred under IFRS 16	218	218
ΙΝϹΟΜΕ ΤΑΧ		
Liability for remaining coverage Insurance revenue Application of IFRS 17.41(a) and B121(a)(IA)	120	120
Income tax expense Current tax liability <i>Application of IAS 12</i> Income Tax	120	120
The above journal entries may result in the follow	ing line items in	the

statement of profit or loss for the period ended 31 December 2024:

	IAS 1 ref	CU
Insurance revenue (120 + 218)	82(a)(ii)	338
Insurance service expenses	82(ab)	(218)
Underwriting result		120
Tax expense	82(d)	(120)

15.2.1.A. Insurance revenue related to the provision of services in a period

When an entity provides services in a period, it reduces the liability for remaining coverage for the services provided and recognises revenue. This is consistent with revenue recognition under IFRS 15 in which an entity recognises revenue and derecognises the performance obligation for services that it provides.⁵¹⁵

The reduction in the liability for remaining coverage that gives rise to insurance revenue excludes changes in the liability that do not relate to services expected to be covered by the consideration received by the entity. These are changes that:⁵¹⁶

- Do not relate to services provided in the period, for example:
- Changes resulting from cash inflows from premiums received
- Changes that relate to investment components in that period
- Changes resulting from cash flows from loans to policyholders
- Changes that relate to transaction-based taxes collected on behalf of third parties (such as premium taxes, value added taxes and goods and services taxes)
- Insurance finance income or expenses
- Insurance acquisition cash flows
- Derecognition of liabilities transferred to a third party
- Relate to services, but for which the entity does not expect consideration, i.e., increases and decreases in the loss component of the liability for remaining coverage.

Additionally, any insurance revenue presented in profit or loss should exclude any investment components as well as amounts not arising from the provision of insurance services.⁵¹⁷

To the extent that an entity derecognises an asset for cash flows other than insurance acquisition cash flows at the date of initial recognition of a group of insurance contracts (see 9.5.1), it should recognise insurance revenue and expenses for the amount derecognised at that date.⁵¹⁸

After having explained what insurance revenue is not, IFRS 17 then explains which changes in the liability for remaining coverage in the period relates to services for which the entity expects to receive compensation. Those changes are:⁵¹⁹

Insurance service expenses incurred in the period (measured at the amounts expected at the beginning of the period), excluding:

⁵¹⁵ IFRS 17.B123.

⁵¹⁶ IFRS 17.B123.

⁵¹⁷ IFRS 17.85.

⁵¹⁸ IFRS 17.B123A.

⁵¹⁹ IFRS 17.B124.

- Amounts allocated to the loss component of the liability for remaining coverage
- Repayments of investment components
- Amounts related to transaction-based taxes collected on behalf of third parties (such as premium taxes, value added taxes and goods and services taxes)
- Insurance acquisition expenses
- The amount related to the risk adjustment for non-financial risk
- > The change in risk adjustment for non-financial risk, excluding:
 - Changes included in insurance finance income or expenses
 - Changes that adjust the contractual service margin because they relate to future service
 - Amounts allocated to the loss component of the liability for remaining coverage
- The amount of the contractual service margin recognised in profit or loss in the period
- Other amounts, if any, for example, experience adjustments for premium receipts other than those that relate to future service

Insurance revenue related to insurance acquisition cash flows should be determined by allocating the portion of the premiums that relate to recovering those cash flows to each reporting period in a systematic way on the basis of passage of time. An entity should recognise the same amount as insurance service expenses.⁵²⁰ The purpose of this is to separately identify and recognise the recovery of the insurance acquisition cash flows through insurance revenue over the coverage period. The following example illustrates how insurance acquisition cash flows are allocated to revenue.

Frequently asked questions

Question 15-1: Can experience adjustments relate to insurance acquisition cash flows and how do they align to the definition of insurance acquisition cash flows? [TRG meeting September 2018 – Agenda paper no. 6, Log S80]

The IASB staff paper noted that insurance acquisition cash flows are included in the determination of the contractual service margin or loss component for a group of insurance contracts on initial recognition. They are treated the same way as other cash flows incurred in fulfilling insurance contracts. An entity is, therefore, not required to identify whether it will recover the acquisition cash flows at each reporting date since the measurement model captures any lack of recoverability automatically. It does this by limiting the contractual service margin from becoming negative. When expected cash inflows are less than the total of expected cash outflows (including acquisition cash flows) and the risk adjustment for non-financial risk, a loss component is recognised along with a charge to profit or loss.

⁵²⁰ IFRS 17.B125.

Frequently asked questions (cont'd)

The TRG members observed that:

- An entity is not required separately to identify whether it will recover insurance acquisition cash flows at each reporting date.
- IFRS 17 assumes that the portion of premiums relating to the recovery of insurance acquisition cash flows is equal to the current estimate of total expected insurance acquisition cash flows at each reporting period.

The TRG members also noted that experience adjustments arising from premiums received in the period that relate to future service, and the related cash flows such as insurance acquisition cash flows, adjust the contractual service margin.

This means that, for example, if initial estimates of acquisition cash flows, payable at the end of a one-year coverage period, were CU100 and, at six months into the coverage period, the entity now expects to pay CU120 for acquisition cash flows at the end of the coverage period compared to the initial expectation of CU100; then the amount of insurance service expenses related to the amortisation of acquisition cash flows (and insurance revenue recognised) at six months is CU60 (CU120 x 6/12).

Question 15-2: Does IFRS 17 require or permit an entity to accrete interest on the amount of acquisition cash flows paid for determining the insurance revenue and insurance services expenses applying paragraph B125? [TRG meeting April 2019 – Agenda paper no. 2, Log S121]

The IASB staff observed that an entity is required to determine insurance revenue related to insurance acquisition cash flows by allocating the portion of premiums that relate to recovering those cash flows to each reporting period in a systematic way on the basis of passage of time. Such a systematic way does not preclude consideration of interest accretion.

Illustration 78 – Allocating a portion of premiums to recovery of insurance acquisition cash flows

An entity issues a group of insurance contracts with a coverage period of four years. The entity pays initial acquisition cash flows of CU200 and expects to pay trail commission of CU50 at the end of year 4. The group of contracts is not determined to be onerous. The entity estimates, at the time of initial recognition of the group of contracts, that the discount rate that applies to nominal cash flows that do not vary based on the returns on any underlying items is 3% per year.

The present value of expected insurance acquisition cash flows at initial recognition is CU244 [CU200 + (CU50 \div 1.03^4)] which is part of the initial liability for remaining coverage. This is reduced when the insurance acquisition cash flows occur. The entity elects to accrete interest on the insurance acquisition cash flows (see 9.3 above) and estimates the portion of premiums that relates to the recovery of insurance acquisition cash flows in each of the four years of coverage after accreting interest on the opening balance to be CU63, CU65, CU67 and CU68. The entity recognises the same amounts as insurance service expenses in each year (i.e., insurance revenue and insurance service expenses are grossed up for the same amount of CU263).

Illustration 78 – Allocating a portion of premiums to recovery of insurance acquisition cash flows (cont'd)

	Year 1	Year 2	Year 3	Year 4
A. Memorandum balance at the beginning of the year of coverage	244	188	129	66
B. Accretion of interest at 3% per year	7	6	4	2
C. Amount allocated for the year (A+B)/the number of remaining years of coverage	(63)	(65)	(67)	(68)
D. Memorandum balance at the end of the year	188	129	66	0

How we see it

- Revenue recognition will be different from practice under IFRS 4, particularly for life contracts where the accounting practice in many jurisdictions is to recognise premiums due in a period as equivalent to revenue. Revenue in IFRS 17 excludes investment components and recognises revenue as service is provided, instead of when premiums are due to be received. Maintaining records of the liability for remaining coverage for each group of insurance contracts, including any loss component, over the course of the coverage period, and adjusting the amount recognised in profit or loss in each period as revenue for investment components will call for new systems and processes.
- The new measurement of insurance revenue is also likely to change reported metrics and even impact on the perceived size of entities where this is based on the amount of revenue reported.
- Insurance revenue should also incorporate a financing effect (i.e., the adjustment for the effect of time value of money, see 15.2.1 above), with a corresponding effect reflected in insurance service expenses. The Standard is clear that for contracts with direct participation feature this effect is determined using a current discount rate. The Standard is also clear that for contracts accounted for under the premium allocation approach the financing effect (if any) should be determined using the discount rate locked-in at initial recognition of the group of contracts. However, the Standard is not clear on whether the financing effect for contracts accounted for under the general model should be based on current rates or locked-in rates. An entity would therefore have to make an accounting policy choice between a current rate and a locked-in for determining the financing effect under the general model and apply this choice consistently to contracts accounted for under the general model.
- An entity must allocate the portion of the premium that relates to recovering the insurance acquisition cash flows in a systematic way on the basis of time over the coverage period. Such a pattern does not necessarily have to be purely time-proportionate but could also

be another systematic basis that appropriately considers the passage of time, like coverage units. Further, as observed by the TRG and as mentioned under 9.3 above, the standard does not preclude determining this basis in a way that considers the accretion of interest. This means an entity will have to determine its accounting policy on accreting interest to the memorandum balance of insurance acquisition cash flows.

15.2.1.B. Revenue under the premium allocation approach

When an entity applies the premium allocation approach, insurance revenue for the period is the amount of expected premium receipts (excluding any investment component and adjusted to reflect the time value of money and the effect of financial risk, if applicable) allocated to the period. The entity should allocate the expected premium receipts to each period of insurance contract services:⁵²¹

- On the basis of the passage of time; but
- If the expected pattern of release of risk during the coverage period differs significantly from the passage of time, then on the basis of the expected timing of incurred insurance service expenses.

An entity should change the basis of allocation between the two methods above, as necessary, if facts and circumstances change.⁵²² Any change must be reflected in the basis of allocation as a change in accounting estimate and applied prospectively (see section 10.3).

If an entity using the premium allocation approach does not expense insurance acquisition cash flows as incurred (see 10.2 above), the same guidance applies for allocating these to revenue as discussed at 15.2.1 above for the general approach.

How we see it

- The premium allocation approach has many similarities with current practice for non-life insurance based on the unearned premium reserve (UPR) method. However, entities should determine whether the allocation guidance in IFRS 17 requires a change in the revenue recognition pattern. This would be the case if, for example, the expected pattern of release of risk during the coverage period differs significantly from the passage of time, but the entity currently recognises revenue based on the passage of time.
- The standard is silent on how to apply the systematic way on the basis of passage of time for allocating the insurance acquisition over the coverage period. The standard, therefore, does not appear to preclude applying this allocation pattern in a way that is consistent with the pattern for recognising insurance revenue under the premium allocation approach. This could be administratively easier for entities as they can then determine revenue on a 'net' basis (i.e., the premium amount less insurance acquisition cash flows) and then 'gross up' insurance revenue and insurance service expenses for the amount of insurance acquisition

⁵²¹ IFRS 17.B126.

⁵²² IFRS 17.B127.

cash flows allocated to the period for presentation in the income statement.

15.2.1.C. Income or expense from reinsurance contracts held

IFRS 17 permits an entity to present income or expenses from a group of reinsurance contracts held, other than insurance finance income or expenses, either:⁵²³

As a single amount

Or

Separately, the amounts recovered from the reinsurer and an allocation of the premiums paid that, together, give a net amount equal to that single amount

If an entity presents separately the amounts recovered from the reinsurer and an allocation of the premiums paid, it should:⁵²⁴

- Treat reinsurance cash flows that are contingent on claims on the underlying contracts (which would include profit commission payable or receivable) as part of the claims that are expected to be reimbursed under the reinsurance contract held
- Treat amounts from the reinsurer that it expects to receive that are not contingent on the claims of the underlying contracts (for example, some types of ceding commissions) as a reduction in the premiums to be paid to the reinsurer
- Treat amounts recognised relating to recovery of losses when an entity has a group of reinsurance contracts held providing coverage for an onerous group of underlying insurance contracts as amounts recovered from the reinsurer (see 11.4.2 above)
- Not present the allocation of premiums paid as a reduction in revenue

15.2.2. Insurance service expense

Insurance service expenses comprise the following:525

- Incurred claims (excluding repayments of investment components) and other incurred service expenses
- Amortisation of insurance acquisition cash flows
- Changes in fulfilment cash flows that relate to past services, i.e., relating to the liability for incurred claims
- Changes in fulfilment cash flows that relate to future service, but which do not adjust the contractual service margin, i.e., losses on onerous groups of contracts and reversals of such losses

An entity needs to disaggregate this information (for example, to show insurance acquisition cash flows separately from other insurance service

⁵²³ IFRS 17.86. ⁵²⁴ IFRS 17.86.

⁵²⁵ IFRS 17.84.

expenses) when it is relevant to understanding the entity's financial performance (see 15.2 above).

With respect to the change in risk adjustment for non-financial risk, the entire change is included as part of insurance service result unless the entity has decided to disaggregate this change between the insurance service result and the insurance finance income or expense.⁵²⁶

15.3. Insurance finance income or expenses

Insurance finance income or expenses comprise the change in the carrying amount of the group of insurance contracts arising from:⁵²⁷

- The effect of the time value of money and changes in the time value of money; and
- > The effect of financial risk and changes in financial risk; but
- Exclude any such changes for groups of insurance contracts with direct participation features that would adjust the contractual service margin, but do not do so in certain circumstances and are included in insurance service expenses instead. These circumstances occur when:
 - The entity's share of a decrease in the fair value of the underlying items exceeds the carrying amount of the contractual margin and gives rise to a loss, or an increase in the amount of the entity's share of the fair value that causes a reversal of that loss
 - Increases in the fulfilment cash flows exceed the carrying amount of the contractual service margin and give rise to a loss, or decreases in fulfilment cash flows are allocated to the loss component of the liability for remaining coverage

Insurance finance income or expenses do not include income or expenses related to financial assets or liabilities within the scope of IFRS 9, such as investment finance income on underlying items. This is disclosed separately under IAS 1 (see 5.2 above).

An entity is required to include in insurance finance income or expenses the effect of the time value of money and financial risk and changes therein. For this purpose: 528

- Assumptions about inflation based on an index of prices or rates or on prices of assets with inflation-linked returns are assumptions that relate to financial risk
- Assumptions about inflation based on an entity's expectation of specific price changes are not assumptions that relate to financial risk
- Changes in the measurement of a group of insurance contracts caused by changes in the value of underlying items (excluding additions and

⁵²⁶ IFRS 17.81.

⁵²⁷ IFRS 17.87.

⁵²⁸ IFRS 17.B128

withdrawals) are changes arising from the effect of the time value of money and financial risk and changes therein.

The words in the last bullet point above mean that changes in the measurement of insurance contracts arising from changes in underlying items, including changes in the value of underlying items not caused by the time value of money or the effect of financial risks, for example, where the underlying items include non-financial assets, should be treated as insurance finance income or expenses. This is because the underlying items are regarded as investments that determine the amount of some payments to policyholders. The underlying items referred to are those that affect measurement of all insurance contracts and not only underlying items in respect of contracts with direct participation features. The Basis for Conclusions observes that, without this requirement, changes in underlying items could adjust the contractual service margin of insurance contracts without direct participation features. The Board considered a view that, although it would be complex, the effects of changes in cash flows from participating in underlying items that are not financial in nature (for example, insurance contracts) should be presented within the insurance service result, rather than within insurance finance income or expenses. The Board disagreed with this view because the requirement to reflect changes from participation in underlying items in insurance finance income or expenses appropriately depicts the nature of the participation, as an investment. In the Board's view, policyholder participation in underlying items that are not solely financial in nature, such as insurance contracts, should not change the underlying insurance service result. Further, splitting the effect of changes in cash flows resulting from the participation in underlying items that are not solely financial in nature into an amount that should be included in the insurance service result and an amount that should be included in insurance finance income or expense would be complex and could disrupt implementation for some entities.⁵²⁹

Exchange differences on changes in the carrying amount of groups of insurance contracts, including the contractual service margin, are included in the statement of profit or loss, unless they relate to changes in the carrying amount of groups of insurance contracts in other comprehensive income, in which case, they should be included in other comprehensive income.⁵³⁰ Neither IAS 21 *The Effects of Changes in Foreign Currency Rates* nor IFRS 17 specify where, in profit or loss, exchange differences should be presented – see 8.3 above.

Frequently asked questions

Question 15-3: Are changes in fulfilment cash flows as a result of changes in inflation assumptions treated as changes in non-financial risk (which may adjust the contractual service margin) or changes in financial risk for contracts measured under the general model? [TRG meeting April 2019 – Agenda paper no. 2, Log S122]

The submission provided examples of cash flows such as claims contractually linked to a specified consumer price inflation index and cash flows that are not contractually linked to an index, but which are expected to increase with inflation. The IASB staff observed that cash flows that

⁵²⁹ IFRS 17.BC342A.

⁵³⁰ IFRS 17.92.

an entity expects to increase with an index are an assumption that relates to financial risks, even if the cash flows are not contractually linked to a specific index. The TRG members did not disagree with the IASB staff's observation.

15.3.1. Presentation of insurance finance income or expenses in the statement of comprehensive income

Except for insurance finance income or expenses arising from insurance contracts under the variable fee approach when risk mitigation is applied, entities have an accounting policy choice between presenting insurance finance income or expenses in profit or loss, or disaggregated between profit or loss and other comprehensive income.⁵³¹

If an entity mitigates the effect of financial risk under the variable fee approach (see 12.3.5 above) using derivatives and non-derivative financial assets measured at fair value through profit or loss, it should include insurance finance income or expenses for the period in profit or loss. If an entity mitigates the effect of financial risk using reinsurance contracts held insurance finance income or expenses should be allocated between profit and loss and other comprehensive income on the basis of the allocation used by the reinsurance contract.⁵³²

An entity should apply its choice of accounting policy to portfolios of insurance contracts. The choice is then applied to all groups of contracts within that portfolio. In assessing the appropriate accounting policy for a portfolio of insurance contracts, applying the requirements of IAS 8 *Accounting Policies, Changes in Accounting Estimates and Errors,* the entity should consider for each portfolio the assets that the entity holds and how it accounts for those assets.⁵³³

neome of expenses in the statement of comprehensive income are, as follows.		
Type of contract	Accounting	Unit of account
General model		
Present value of future cash flows	All in profit or loss unless disaggregated between profit and loss and other comprehensive income	Disaggregation choice per portfolio
Risk adjustment for	Follows the present	Disaggregation choice

value of future cash

flows as per above for insurance finance income or expenses (i.e., all in profit and per portfolio

A summary of the policy choices that apply when allocating insurance finance income or expenses in the statement of comprehensive income are, as follows:

non-financial risk

⁵³¹ IFRS 17.88 and 89.

⁵³² IFRS 17.B117A.

⁵³³ IFRS 17.B129.

Type of contract	Accounting	Unit of account
	loss or disaggregated) if the entity has elected to disaggregate the risk adjustment between insurance service result and insurance finance income or expenses (see 15.3.1 above)	
Contractual service margin	All in profit and loss as not revalued at current interest rates	N/A
Premium allocation appl	roach	
Liability for remaining coverage	All in profit and loss as not revalued at current interest rates	N/A
Liability for incurred claims	All in profit or loss unless disaggregated between profit and loss and other comprehensive income	Disaggregation choice per portfolio
Variable fee approach		
Present value of future cash flows	All in profit or loss unless disaggregated between profit and loss and other comprehensive income	Disaggregation choice per portfolio
Risk adjustment for non-financial risk	Follows the present value of future cash flows for insurance finance income or expenses as per above (i.e., all in profit and loss or disaggregated) if the entity has elected to disaggregate the risk adjustment between insurance service result and insurance finance income or expenses (see 15.3.1 above)	Disaggregation choice per portfolio

Type of contract	Accounting	Unit of account
Contractual service margin	The contractual service margin is at current interest rates so this leads to an offset between fulfilment cash flows and contractual service margin rather than being presented in insurance finance income or expenses	Not applicable

When disaggregation is selected, the methodology required for allocating insurance finance income or expenses between profit and loss and other comprehensive income is different depending on the entity's accounting policy choices based on the nature of the insurance contract liabilities in the portfolio.

The disaggregation approaches for each type of insurance contract are discussed at 15.3.2 to 15.3.4 below.

In summary, the approaches determining what portion of insurance finance income or expenses is attributed to profit and loss for portfolios of contracts, except those to which risk mitigation is applied, under the variable fee approach is, as follows:



This can be further illustrated, as follows:

Contract type	Amount recognised in profit or loss	OCI element recycled
Groups of insurance contracts without direct participating features where the effect of financial risk assumptions does not have a substantial effect on the policyholder	Using discount rates determined on initial recognition	Yes
Groups of insurance contracts without direct participating features where the effect of financial risk assumptions has a substantial effect on the policyholder	Choice of (a) effective yield or (b) projected crediting approach	Yes
Contracts accounted for under the premium allocation approach (incurred claims)	Using discount rates determined at date of incurred claim	Yes
Groups of insurance contracts with direct participating features where the underlying items are not held but the effect of financial risk assumptions has a substantial effect on the policyholder	Choice of (a) effective yield or (b) projected crediting approach	Yes
Groups of insurance contracts with direct participating features where the underlying items are held	Current period book yield approach (i.e., net profit or loss impact in the period should be nil)	No

Frequently asked questions

Question 15-4: In a situation in which portfolios of insurance contracts change due to the manner in which the entity manages its contracts, what is the impact of such a change on the group unit of account or the application of the option to disaggregate insurance finance income or expenses between profit or loss and other comprehensive income? [TRG meeting April 2019 – Agenda paper no. 2, Log S106]

Frequently asked questions (cont'd)

The IASB staff observed that paragraph 24 of IFRS 17 requires that an entity establishes groups of contracts at initial recognition and does not reassess the composition of the groups subsequently. Paragraph B129 of IFRS 17 states that the option to disaggregate insurance finance income or expense between profit or loss and other comprehensive income is a policy choice applied to portfolios of insurance contracts. Applying paragraph 13 of IAS 8 means that an entity selects and applies its accounting policy consistently for similar portfolios of insurance contracts. The requirements of IAS 8 are applicable for changes in accounting policies. This implies that when an entity decides to choose a policy of disaggregation (or decides to cease a policy of disaggregation) that policy change or choice should be applied to all similar portfolios.

How we see it

- Allowing entities to choose between recognising insurance finance income or expenses wholly in profit or loss, or disaggregating it between profit or loss and other comprehensive income, significantly reduces the comparability of profits between entities that apply IFRS 17. There is a trade-off between ensuring comparability between entities and allowing entities to choose how to present insurance finance income or expenses in the accounting in a way that, together with the accounting for their assets backing the insurance liabilities, best fits with how they manage financial risk.
- Entities would typically try to minimise accounting mismatches between assets and liabilities. For example, entities that have financial assets held within a business model whose objective is achieved by both collecting contractual cash flows and selling financial assets and, therefore, record the effect of fair value fluctuations on those securities in other comprehensive income under IFRS 9, would be expected to disaggregate insurance finance income or expenses between profit or loss and other comprehensive income on related insurance contract liabilities to minimise accounting mismatches. Conversely, an entity would be less inclined to disaggregate insurance finance income or expenses for portfolios of insurance contracts where the assets backing those liabilities include a substantial proportion of financial instruments which are held at fair value with changes in fair value through profit or loss under IFRS 9.
- In presenting insurance finance income or expense, an entity is permitted, but not required, to disaggregate the change in risk adjustment for non-financial risk between the insurance service result and insurance finance income or expenses. The risk adjustment reflects the uncertainty of the present value of cash flows. Consequently, its measurement implicitly reflects the time value of money. Permitting entities, as an accounting policy choice, to disaggregate a financing element of changes in the risk adjustment for non-financial risks gives them the opportunity to select their preferred way of reporting the effects of changes in the risk adjustment. However, given the fact that IFRS 17 does not prescribe any specific methods for estimating the adjustment, many may choose not to disaggregate the time value element of changes in the carrying amount of the risk adjustment for non-financial risk. In that case, the entity should include the entire change in the risk adjustment for non-financial risk adjustment for non-financial risk adjustment for non-financial risk adjustment for non-financial risk. In that case, the entity should include the entire change in the risk adjustment for non-financial risk adjustment for non-financial risk adjustment for non-financial risk adjustment for non-financial risk.

15.3.2. Allocating insurance finance income or expenses for contracts except those with direct participation features for which the entity does not hold the underlying items

For insurance contracts without direct participation features and contracts with direct participation features where the entity does not hold the underlying items (i.e., all insurance contracts except those with direct participation features for which the entity holds the underlying items), an entity should make an accounting policy choice between:⁵³⁴

 Including insurance finance income or expenses for the period in profit or loss

And

Disaggregating insurance finance income or expenses for the period to include in profit in loss, an amount determined by a systematic allocation of the expected total insurance finance income or expenses over the duration of the group of contracts

When an entity chooses a disaggregation policy for a portfolio, the amount included in other comprehensive income is the difference between the insurance finance income or expenses included in profit and loss measured on a systematic allocation basis (see 15.3.1 above) and the total insurance finance income or expenses in the period, i.e., the amount included in other comprehensive income is the balancing figure.⁵³⁵

This approach applies to both the liability for remaining coverage and the liability for incurred claims under the general model. Under the premium allocation model, it applies only to the liability for incurred claims. It does not apply to the liability for remaining coverage under the premium allocation approach unless the group of contracts becomes onerous as the liability for remaining coverage is discounted using the rates at initial recognition of the group and not at current rates. Disaggregating discount rates for the liability for incurred claims under the premium allocation approach is discussed at 15.3.3 below.

A systematic allocation means an allocation of the total expected insurance finance income or expenses of a group of insurance contracts over the duration of the group that:⁵³⁶

- Is based on characteristics of the contracts, without reference to factors that do not affect the cash flows expected to arise under the contracts. For example, the allocation of the insurance finance income or expenses should not be based on expected recognised returns on assets if those expected recognised returns do not affect the cash flows of the contracts in the group
- Results in the amounts recognised in other comprehensive income over the duration of the group of contracts totaling zero. The cumulative amount recognised in other comprehensive income at any date is the difference between the carrying amount of the group of contracts and the amount that the group would be measured at when applying the systematic allocation.

⁵³⁴ IFRS 17.88.

⁵³⁵ IFRS 17.90.

⁵³⁶ IFRS 17.B130.

When an entity that has disaggregated insurance finance income or expenses of a group of insurance contracts transfers that group of insurance contracts or derecognises an insurance contract as a result of a modification or transfer (see 13.3.4 above), it should reclassify to profit or loss as a reclassification adjustment any remaining amounts for the group (or contract) that were previously recognised in other comprehensive income as a result of its accounting policy choice.⁵³⁷

15.3.2.A. Allocating insurance finance income or expenses for contracts for which changes that relate to financial risk do not have a substantial effect on the amounts paid to the policyholder

For groups of insurance contracts for which changes in assumptions that relate to financial risk do not have a substantial effect on the amounts paid to the policyholder, the systematic allocation (i.e., the amount presented in profit or loss) is determined using the discount rates at the date of initial recognition of the group of contracts.⁵³⁸

For contracts applying the general model, as the contractual service margin is not remeasured using current rates, all insurance finance income or expenses arising from the accretion of interest of the contractual service margin is recorded in profit or loss.

Frequently asked questions

Question 15-5: For contracts measured applying the general model, when an entity makes an accounting policy choice to disaggregate insurance finance income or expenses between profit or loss and other comprehensive income (OCI), should accumulated OCI on insurance contracts be reclassified to profit or loss when experience does not unfold as expected, and if so, how.? [TRG meeting April 2019 – Agenda paper no. 2, Log S102]

Under IFRS 17, the amount of insurance finance income or expenses allocated to profit or loss is determined by a systematic allocation of the expected total finance income or expenses over the duration of the group. This results in the amounts recognised in other comprehensive income over the duration of the group of contracts totalling zero. The IASB staff observed that the cumulative amount recognised in other comprehensive income at any date is the difference between the carrying amount of the group of contracts and the amount that the group would be measured at when applying the systematic allocation of the expected total insurance finance or expenses over the duration of the group. That is, when the insurance liability is increased or decreased as a result of experience adjustments, the discount rate used for the systematic allocation of the expected total insurance finance income or expenses continues to be calculated as before (e.g., based on the discount rates determined at initial recognition for a group of insurance contracts for which changes in assumptions that relate to financial risk do not have a substantial effect on the amounts paid to the policyholder) and a reclassification adjustment occurs only on derecognition.

⁵³⁷ IFRS 17.91(a).

⁵³⁸ IFRS 17.B131.

Illustration 79– Allocating insurance finance income or expenses for contracts where the impact of financial risk on the amounts paid to policyholders is not substantial

On initial recognition of a group of insurance contracts an entity expects to pay policyholders CU1,890 at the end of Year 3. The impact of financial risk on the amounts paid to the policyholders is not substantial and is not affected by changes in discount rates. The interest rate at initial recognition of the group of contracts is 10% and there are no changes to this applying a weighted average discount rate. For simplicity it is assumed that all premiums (cash inflows) are received at the date of initial recognition and all other amounts, including the risk adjustment for non-financial risk, are ignored. Applying paragraph B131 of IFRS 17, the entity disaggregates insurance finance income or expense using the discount rates determined on initial recognition of the group.

At initial recognition, the present value of expected future cash flows is CU1,420 (i.e., CU1,890 discounted for 3 years at 10% being CU1,562 after one year, CU1,718 after 2 years and CU1,890 after 3 years).

At the end of year 1, the present value of expected future cash flows is CU1,562 (i.e., CU1,890 discounted for 2 years at 10%). The insurance finance income or expenses of CU142 (i.e., CU1,562 less CU1,420) is debited to profit or loss as there is no difference between current discount rates and the discount rate at initial recognition.

At the end of year 2, market interest rates have reduced to 5%. As a result, the present value of expected future cash flows at the end of year 2 is CU1,800. The insurance finance income or expenses of CU238 (i.e., CU1,800 less CU1,562) is allocated, as follows:

- CU156 is debited to profit or loss being the difference between CU1,800 and CU1,562 at the discount rate at initial recognition of 10%.
- CU82 is debited to other comprehensive income being the difference being total insurance finance income or expenses of CU238 and the amount allocated to profit or loss of CU156.

At the end of year 3, market interest rates are still 5%. As a result, the insurance finance income or expenses of CU90 (i.e., CU1,890 less CU1,800) is allocated, as follows:

- CU172 is debited to profit or loss being the difference between CU1,718 and CU1,890 using the discount rate and cash flows at initial recognition of 10%.
- CU82 is credited to other comprehensive income being the difference being total insurance finance income or expenses of CU90 and the amount allocated to profit or loss of CU172.

The net cumulative amount in other comprehensive income at the end of year 3 is CU nil.

15.3.2.B. Allocating insurance finance income or expense for contracts for which changes in assumptions that relate to financial risk have a substantial effect on amounts paid to policyholders

For groups of insurance contracts for which changes in assumptions that relate to financial risk have a substantial effect on the amounts paid to the policyholders, which will include contracts with direct participation features for which the underlying items are not held, a systematic allocation for the finance income or expenses arising from the estimates of future cash flows can be determined in one of the following ways:⁵³⁹

Using a rate that allocates the remaining revised expected finance income or expenses over the remaining duration of the group of contracts at a constant rate ('effective yield approach')

Or

For contracts that use a crediting rate to determine amounts due to the policyholders, using an allocation that is based on the amounts credited in the period and expected to be credited in future periods to the policyholder ('projected crediting approach')

IFRS 17 does not provide guidance on how to determine 'substantial effect' although it is presumably intended to be interpreted similarly to the words 'substantial share' and 'substantial proportion' discussed in the context of insurance contracts with direct participation features at 12.3.1 above. A group of insurance contracts with direct participation features will usually be a group for which changes in assumptions that relate to financial risk have a substantial effect on the amounts paid to the policyholders. In addition, a group of insurance contracts that have failed to meet the criteria for applying the variable fee approach because of, for example, a lack of a clearly identified pool of underlying items (see 12.3.1 above) might also be groups of contracts for which changes in assumptions that relate to financial risk (e.g., a change in the crediting rate or dividend amount) have a substantial effect on the amounts paid to policyholders.

The decision to elect either an effective yield approach or a projected crediting approach is an accounting policy choice and is applied to eligible groups according to the criteria in IAS 8.

A systematic allocation for the finance income or expenses arising from the risk adjustment for non-financial risk, if separately disaggregated from other changes in the risk adjustment for non-financial risk, is determined using an allocation consistent with that used for the allocation for the finance income or expenses arising from the future cash flows.⁵⁴⁰

A systematic allocation for the finance income or expenses arising from the contractual service margin is determined:⁵⁴¹

For insurance contracts that do not have direct participation features, using the discount rates determined at the date of initial recognition of the group of contracts (which results in the entire insurance finance income or

⁵³⁹ IFRS 17.B132(a).

⁵⁴⁰ IFRS 17.B132(b).

⁵⁴¹ IFRS 17.B132(c).

expenses allocated to profit or loss since the contractual service margin is not remeasured at current rates)

For insurance contracts with direct participation features, using an allocation consistent with that used for the allocation for the interest income or expenses arising from future cash flows

Illustration 80- Allocating insurance finance income or expenses for contracts where the impact of financial risk on the amounts paid to policyholders not substantial - effective yield approach [Based on example 15A in the Illustrative Examples to IFRS 17, IE155-IE164]

On initial recognition of a group of insurance contracts an entity expects to pay policyholders CU1,890 at the end of Year 3. The interest rate at initial recognition of the group of contracts is 10% and there are no changes to this applying a weighted average discount rate. For simplicity it is assumed that all premiums (cash inflows) are received at the date of initial recognition and all other amounts, including the risk adjustment for non-financial risk, are ignored. The entity choses to disaggregate insurance finance income or expenses using a systematic allocation of the total expected insurance finance finance income or expenses over the remaining duration of the group.

At initial recognition, the present value of expected future cash flows is CU1,420 (i.e., \leq 1,890 discounted for 3 years at 10%, being CU1,562 after one year, CU1,718 after 2 years and CU1,890 after 3 years)).

At the end of year 1, market interest rates have reduced to 5%. Consequently, the entity revises its expectations as to the future cash flows it will pay its policyholders and now expects to pay only CU1,802 at the end of year 3. The revised constant interest rate is calculated at 7.42% a year (i.e., the rate required to accrete CU1,562 up to CU1,802). As a result, the revised present value of future cash flows at the end of year 1 is CU1,635.

Applying paragraph B132(a)(i), the entity recognises in profit or loss the insurance finance income or expenses calculated as the change in estimates of the present value of the future cash flows at the constant rate of return. In year 1, the finance expenses of CU142 in profit or loss is the difference between the estimates of the present value of future cash flows at the original constant rate of 10% at the end of the year 1 of CU1,562 and the corresponding amount at the beginning of the period of CU1,420. Applying paragraph B130(b), the entity recognises in other comprehensive income the difference between the total insurance finance expense of CU215 (i.e., the difference between opening fulfilment cash flows of \leq 1,420 and the current fulfilment cash flows of CU1,635) and the amount included in profit or loss of \leq 142, i.e., CU73.

At the end of year 2, market interest rates are still 5%. The present value of expected future cash flows discounted at current rates is CU1,716. The insurance finance income or expenses of CU81 (i.e., the difference between CU1,716 and the opening revised cash flows of CU1,635) is allocated, as follows:

 CU116 is debited to profit or loss being the difference between the estimates of future cash flows of CU1,562 and CU1,678 using the constant rate of return of 7.34% Illustration 80- Allocating insurance finance income or expenses for contracts where the impact of financial risk on the amounts paid to policyholders not substantial - effective yield approach [Based on example 15A in the Illustrative Examples to IFRS 17, IE155-IE164] (cont'd)

CU35 is credited to other comprehensive income being the difference being total insurance finance income or expenses of CU81 and the amount allocated to profit or loss of CU116.

At the end of year 3, market interest rates are still 5%. As a result, the insurance finance income or expenses of CU86 (i.e., CU1,802 less CU1,716) is allocated, as follows:

- CU124 is debited to profit or loss being the difference between the final cash flows of CU1,802 and the previous discounted figure of CU1,678 using the constant rate of return of 7.34%
- CU38 is credited to other comprehensive income being the difference being total insurance finance income or expenses of CU86 and the amount allocated to profit or loss of CU124

The net cumulative amount in other comprehensive income at the end of year 3 is nil.

Illustration 81– Allocating insurance finance income or expenses for contracts where the impact of financial risk on the amounts paid to policyholders not substantial - projected crediting rate approach [Based on example 15B in the Illustrative Examples to IFRS 17, IE165-IE172]

On initial recognition of a group of insurance contracts, an entity receives a single premium of CU15 for 100 insurance contracts with a coverage period of three years. The total premium for the group of contracts is CU1,500. On initial recognition, the entity expects to achieve rate of return on underlying items of 10% each year and to credit the policyholder account balances by 8% each year (the expected crediting rate). Consequently, the entity expects to pay policyholders CU1,890 at the end of Year 3 (CU1,500 X 1.08 X 1.08 x 1.08). At initial recognition, the present value of the expected cash flow at the end of year three amounts to CU1,420 (CU1,890 \div ((1 + 0.10)^3)).

In Year 1, the entity credits the policyholder account balances with a return of 8% a year, as expected at the date of initial recognition.

At the end of Year 1, the market interest rate falls from 10% per year to 5% per year. Consequently, the entity revises its expectations about cash flows, as follows:

- It will achieve a return of 5% in Year 3 after reinvesting the maturity proceeds of the bonds that mature at the end of Year 2
- It will credit the policyholder account balances 8% in Year 2 and 3% in Year 3
- It will pay policyholders CU1,802 at the end of Year 3 (CU1,500 x 1.08 x 1.08 x 1.03)

Illustration 81- Allocating insurance finance income or expenses for contracts where the impact of financial risk on the amounts paid to policyholders not substantial - projected crediting rate approach [Based on example 15B in the Illustrative Examples to IFRS 17, IE165-IE172] (cont'd)

The entity elects to disaggregate insurance finance income or expenses using an allocation to profit or loss based on amounts credited in the period and expected to be credited in future periods (a 'projected crediting rate approach').

Therefore, the entity allocates the remaining expected insurance finance income or expenses over the remaining life of the contracts using the series of discount rates calculated as the projected crediting rates multiplied by the constant factor. The constant factor and the series of discount rates based on crediting rates at the end of Year 1 are, as follows:

- The product of the actual crediting rate in Year 1 and the expected crediting rates in Years 2 and 3 equals 1.20 (1.08 x 1.08 x 1.03)
- The carrying amount of the liability increases by a factor of 1.269 over three years because of the interest accretion (CU1,802 ÷ CU1,420)
- Consequently, each crediting rate needs to be adjusted by a constant factor (K), as follows 1.08K x 1.08K x 1.08K = 1.269
- The constant K equals 1.0184 calculated as $(1.269 / 1.20)^{1/3}$
- The resulting interest accretion rate for Year 1 is 10% (calculated as 1.08 x 1.0184)

The carrying amount of the liability at the end of Year 1 for the purposes of allocating insurance finance income or expenses to profit or loss is CU1,562 (CU1,420 \times 1.08 \times 1.0184).

The actual crediting rate for Years 2 and 3 are as expected at the end of Year 1. The resulting accretion rate for Year 2 is 10% (calculated as $(1.08 \times 1.0184) - 1$) and for Year 3 is 4.9% (calculated as $(1.03 \times 1.0184) - 1$).

	Initial recognition	Year 1	Year 2	Year 3
	CU	CU	CU	CU
Estimates of future cash flows at the end of Year 3	1,890	1,802	1,802	1,802
Estimates of the present value of future cash flows at current discount rates (A)	1,420	1,635	1,716	1,802
Estimates of future cash flows at discount rates based on projected crediting (B)	1,420	1,562	1,718	1,802
Amount accumulated in other comprehensive income (A-B)	-	73	(2)	-

Illustration 81- Allocating insurance finance income or expenses for contracts where the impact of financial risk on the amounts paid to policyholders not substantial - projected crediting rate approach [Based on example 15B in the Illustrative Examples to IFRS 17, IE165-IE172] (cont'd)

In the table above, CU1,716 equals the estimate of the future cash flows at the end of Year 3 of CU1,802 discounted at the current market rate of 5% per year, i.e., CU1,802 \div 1.05 = CU1,716.

CU1,718 equals the estimates of future cash flows at the end of Year 3 of CU1,802 discounted at the projected crediting rate of 4.9% per year, i.e., CU1,802 \div 1049 = CU1,718.

There is an amount of CU2 accumulated in other comprehensive income at the end of Year 2 because the discount rate based on projected crediting rate of 4.9% per year (1.03 x K) is different from the current discount rate of 5% per year.

The insurance finance income or expenses included in profit or loss and other comprehensive income are, as follows:

	Year 1	Year 2	Year 3	
Insurance income and expensed arising from fulfilment cash flows				
	CU	CU	CU	
Profit or loss	(142)	(156)	(84)	
Other comprehensive income	(73)	75	(2)	
Total comprehensive income	(215)	(81)	(86)	

The entity recognises in profit or loss the insurance finance expenses calculated as the change in the estimates of the present value of the future cash flows at the projected crediting rate. In Year 1, insurance finance expenses of CU142 is the difference between the estimates of the present value of the future cash flows at the original crediting rate of 10 per cent at the end of Year 1 of CU1,562 and the corresponding amount at the beginning of the period of CU1,420.

The entity includes in other comprehensive income, the difference between the amount recognised in total comprehensive income and the amount recognised in profit or loss. In Year 1, for example, the amount included in other comprehensive income of CU(73) is CU(215) minus CU(142). In Years 1-3, the total other comprehensive income equals zero (CU0 = CU(73) + CU75 + CU(2)).

The entity recognises, in total comprehensive income, the change in estimates of the present value of the future cash flows at the current discount rate. In Year 1, the total insurance finance expenses of CU(215) is the difference between the estimates of the present value of the future cash flows at the current discount rate at the beginning of Year 1 of CU1,420 and the corresponding amount at the end of Year 1 of CU1,635.

15.3.3. Allocating insurance finance income or expenses for incurred claims when applying the premium allocation approach

When the premium allocation approach is applied (see 9 above), an entity may be required, or may choose to discount the liability for incurred claims (see 9.4 above). In such cases, it may also choose to disaggregate the insurance finance income or expenses as discussed at 15.3.1 above. If the entity makes this choice, it should determine the insurance finance income or expenses in profit or loss using the discount rate determined at the date of the incurred claim.⁵⁴²

15.3.4. Allocating finance income or expenses for insurance contracts with direct participation features for which the entity holds the underlying items

For insurance contracts with direct participation features, for which the entity holds the underlying items, an entity should make an accounting policy choice between:⁵⁴³

 Including insurance finance income or expenses for the period in profit or loss

Or

Disaggregating insurance finance income or expenses for the period to include in profit or loss an amount that eliminates accounting mismatches, with income or expenses included in profit or loss on the underlying items held

This means that, when disaggregation is applied, the amount included in profit or loss for insurance finance income or expenses for insurance contracts with direct participation features exactly matches the insurance finance income or expenses included in profit or loss for the underlying items, resulting in the net of the separately presented items being nil.⁵⁴⁴ This is sometimes referred to as the current period book yield approach.

An entity may qualify for the current period book-yield approach in some periods but not in others, because of a change in whether it holds the underlying items. If such a change occurs, the accounting policy choice available to the entity changes from that set out above to that set out at 15.3.1 above or vice versa. Hence, an entity might change its accounting policy between that set out above and that set out at 15.3.1 above. In making such a change, an entity should: ⁵⁴⁵

- Include the accumulated amount previously included in other comprehensive income at the date of the change as a reclassification adjustment in profit or loss in the period of change and in future periods, as follows:
 - If the entity had previously applied the requirements described at 15.3.1 above, it should include in profit or loss the accumulated amount included in other comprehensive income before the change

⁵⁴² IFRS 17.B133.

⁵⁴³ IFRS 17.89.

⁵⁴⁴ IFRS 17.B134.

⁵⁴⁵ IFRS 17.B135.

as if it were continuing the approach described at 15.3.1 above based on the assumptions that applied immediately before the change; and

- If the entity had previously applied the requirements above, it should include in profit or loss the accumulated amount included in other comprehensive income before the change as if it were continuing the approach above based on the assumptions that applied immediately before the change.
- Not restate prior period comparatives information

An entity should not recalculate the accumulated amount previously included in other comprehensive income as if the new disaggregation had always applied; nor update the assumptions used for the reclassification in future periods after the date of the change.⁵⁴⁶

When an entity that has disaggregated the insurance finance income or expenses of a group of insurance contracts with direct participation features using the current book yield approach and transfers that group of insurance contracts or derecognises an insurance contract due to a modification (see 13.3.4 above), it should not reclassify to profit or loss as a reclassification adjustment any remaining amounts for the group (or contract) that were previously recognised in other comprehensive income as a result of its accounting policy choice.⁵⁴⁷ This is a different accounting treatment than for contracts which do not apply the current book yield approach (see 15.3.2 above).

Illustration 82 – Allocating insurance finance income or expense for contracts using the current book yield approach [Based on example 16 in the Illustrative Examples to IFRS 17, IE173-IE185]

An entity issues 100 insurance contracts with a coverage period of three years. The coverage period starts when the insurance contracts are issued. The contracts meet the criteria for insurance contracts with direct participation features.

The entity receives a single premium of CU15 for each contract at the beginning of the coverage period (total future cash inflows of CU1,500). The entity promises to pay policyholders on maturity of the contract, an accumulated amount of returns on a specified pool of bonds minus a charge equal to 5% of the premium and accumulated returns calculated at that date. Thus, policyholders that survive to maturity of the contract receive 95% of the premium and accumulated returns. In this example, all other amounts, including the risk adjustment for non-financial risk are ignored for simplicity.

The entity invests premiums received of CU1,500 in zero coupon fixed income bonds with a duration of three years (the same as the returns promised to policyholders). The bonds return a market interest rate of 10% per year. At the end of Year 1, market interest rates fall from 10% a year to 5% per year. The entity measures the bonds at fair value through other comprehensive income applying IFRS 9. The effective interest rate of the bonds acquired is 10% per year, and that rate is used to calculate investment

⁵⁴⁶ IFRS 17.B136.

⁵⁴⁷ IFRS 17.91(b).

Illustration 82 – Allocating insurance finance income or expense for contracts using the current book yield approach [Based on example 16 in the Illustrative Examples to IFRS 17, IE173-IE185] (cont'd)

income in profit or loss. For simplicity, this example excludes the effect of accounting for expected credit losses on financial assets. The value of the bonds held by the entity is illustrated in the table below:

	Initial recognition	Year 1	Year 2	Year 3
	CU	CU	CU	CU
Fair value	1,500	1,811	1,902	1,997
Amortised cost	1,500	1,650	1,815	1,997
Cumulative amounts recognised in other comprehensive income	-	161	87	-
Change in other comprehensive income		161	(74)	(87)
Investment income recognised in profit or loss (effective interest rate)		150	165	182

The entity elects to disaggregate insurance finance income or expenses for each period to include in profit or loss an amount that eliminates accounting mismatches with income or expense included in profit or loss on underlying items held. Therefore, the entity needs to analyse the changes in fulfilment cash flows to decide whether each change adjusts the contractual service margin. The source of the fulfilment cash flows is, as follows:

	Year 1	Year 2	Year 3
Fulfilment cash flows			
	CU	CU	CU
Opening balance	-	1,720	1,806
Change related to future service: new contracts	(75)	-	-
Change in the policyholders' share in the fair value of the underlying items	295	86	90
Cash flows	1,500	-	(1,896)
Closing balance	1,720	1,806	-

Fulfilment cash flows are the estimate of the present value of the future cash inflows and the estimate of the present value of the future cash outflows (in this example, all cash outflows vary based on the returns on underlying items). For example, at initial recognition the fulfilment cash flows of CU(75) are the sum of the estimates of the present value of the future cash inflows of CU(1,500) and the estimates of the present value of the future cash outflows of CU1,425 (the policyholders' share of 95% of the fair value of the underlying items at initial recognition of CU1,500).

Illustration 82 – Allocating insurance finance income or expense for contracts using the current book yield approach [Based on example 16 in the Illustrative Examples to IFRS 17, IE173-IE185] (cont'd)

The change in the policyholders' share in the fair value of the underlying items is 95% of the change in fair value of the underlying items. For example, in Year 1, the change in the policyholders' share in the underlying items of CU295 is 95% of the change in fair value in Year 1 of CU311 (CU1,811 - CU1,500). The entity does not adjust the contractual service margin for the change in the obligation to pay policyholders an amount equal to the fair value of the underlying items because it does not relate to future service.

The entity determines the carrying amount of the contractual service margin at the end of each reporting period, as follows:

	Year 1	Year 2	Year 3
Contractual service margin			
	CU	CU	CU
Opening balance	-	61	33
Change related to future service: new contracts	75	-	-
Change in the entity's share in the fair value of the underlying items	16	5	6
Change relating to current service: recognition in profit or loss for the service provided	(30)	(33)	(38)
Closing balance	61	33	-

The entity adjusts the contractual service margin for the change in the amount of the entity's share of the fair value of the underlying items because those changes relate to future service. For example, in Year 1 the change in the amount of the entity's share of the fair value of the underlying items of CU16 is 5% of the change in fair value of the underlying items of CU311 (CU1,811 - CU1,500). This example does not include cash flows that do not vary based on the returns on underlying items.

The entity determines the amount of contractual service margin recognised in profit or loss by allocating the contractual service margin at the end of the period (before recognising any amounts in profit or loss) equally to each coverage unit provided in the current period and expected to be provided in the future. In this example, the coverage provided in each period is assumed to be the same. Hence, the contractual service margin recognised in profit or loss for Year 1 of CU30 is the contractual service margin before allocation of CU91 (CU75 + CU16), divided by three years of coverage.

The amounts recognised in the statement(s) of financial performance for the periods are, as follows:

Illustration 82 – Allocating insurance finance income or expense for contracts using the current book yield approach [Based on example 16 in the Illustrative Examples to IFRS 17, IE173-IE185] (cont'd)

	Year 1	Year 2	Year 3
Statement(s) of financial performance			
	CU	CU	CU
Profit or loss			
Contractual service margin recognised in profit or loss for the service provided	30	33	38
Insurance service result	30	33	38
Investment income	150	165	182
Insurance finance expense	(150)	(165)	(182)
Profit	30	33	38
Other comprehensive income			
Gain/(loss) on financial assets measured at fair value through other comprehensive income	161	(74)	(87)
Gain/(loss) on insurance contracts	(161)	74	87
Total other comprehensive income	-	-	-

The entity does not adjust the contractual service margin for the changes in the obligation to pay the policyholders an amount equal to the fair value of the underlying items because those changes do not relate to future service. Consequently, the entity recognises those changes as insurance finance income or expenses in the statement(s) of financial performance. For example, in Year 1, the change in fair value of the underlying items is CU311 (CU1,811 - CU1,500).

Furthermore, the entity disaggregates the insurance finance income or expenses for the period between profit or loss and other comprehensive income to include in profit or loss an amount that eliminates accounting mismatches with the income or expenses included in profit or loss on the underlying items held. This amount exactly matches the income or expenses included in profit or loss for the underlying items, resulting in the net of the two separately presented items being zero. For example, in Year 1, the total amount of the insurance finance income or expenses of CU311 is disaggregated and the entity presents in profit or loss the amount of CU150 that equals the amount of finance income for the underlying items. The remaining amount of insurance finance income or expenses of CU161 is recognised in other comprehensive income.

15.4. Reporting the contractual service margin in interim financial statements

IFRS 17 states that if an entity prepares interim financial statements applying IAS 34, it must make an accounting policy choice as to whether to change the treatment of accounting estimates made in previous interim financial statements when applying IFRS 17 in subsequent interim financial statements and in the annual reporting period. The entity must apply its choice of accounting policy to all groups of insurance contracts that it issues and groups of reinsurance contracts it holds.⁵⁴⁸

An entity which elects not to change the treatment of estimates made in previous interim financial statements is likely to have a different accounting result than an entity which does change estimates made in previous interim reporting periods. This is because adjusting the contractual service margin for changes in estimates of the fulfilment cash flows but not for experience adjustments has the consequence that the accounting depends on the timing of a reporting date.⁵⁴⁹

When an entity elects not to change estimates made in previous interim financial statements, the amounts presented in any annual report should equal the values as of the end of the last interim period and the cumulative profit or loss for the year should be the sum of the profit or loss amounts for each interim period. Each interim period is determined separately as if it were a discrete period and the annual period is simply the total of the profit or loss of the discrete interim periods.

"When an entity does restate estimates made in previous interim periods, each interim report includes information which, in aggregate, results in the year-todate figures in that interim report being equal to the value which would have resulted if IFRS 17 had been applied to the full year to date period without any interim periods. The cumulative profit and loss to date of the interim period would equal the cumulative amount on an annual basis to date.

The Board concluded that permitting an accounting policy choice would ease IFRS 17 implementation by enabling an entity to assess which accounting policy is less burdensome. To avoid a significant loss of useful information for users of financial statements, the Board concluded that the entity is required to apply consistently its choice of accounting policy to all groups of insurance contracts it issues and groups of reinsurance contracts it holds (i.e., accounting policy choice at reporting entity level).⁵⁵⁰

There is also related transitional relief available upon applying IFRS 17 for entities applying the modified retrospective approach that elect an accounting policy not to change the treatment of estimates made in previous interim reporting periods. See 17.4 below.

⁵⁴⁸ IFRS 17.B137.

⁵⁴⁹ IFRS 17.BC236.

⁵⁵⁰ IFRS 17.BC236B-C.

Frequently asked questions

Question 15-6: The submission asked for the requirements in paragraph B137 of IFRS 17 to be extended to apply to monthly reporting that is prepared for internal management reporting and external regulatory reporting. The submission notes the operational issues and the complexity involved in developing systems considering the disparity in procedures between monthly closing and quarterly interim reporting [TRG meeting September 2018 – Agenda paper no. 11, Log S56]

The IASB staff confirmed that the requirements of paragraph B137 of IFRS 17 described above apply only to interim reports prepared applying IAS 34 *Interim Financial Reporting*. This can cause a particular issue for groups where the parent does, but the subsidiary does not, prepare IAS 34 interim financial statements. If the parent prepares IAS 34 interim financial statements, but the subsidiary does not, (e.g., the subsidiary prepares interim internal management reports that do not comply with IAS 34) then the choice of changing the treatment of previous estimates in subsequent interim financial statements is available only to the parent and not applicable to the subsidiary. The TRG members agreed with the IASB staff's interpretation, but highlighted the significant operational challenges of applying it in practice.

Illustration 83 – The contractual service margin and interim reporting

This example focuses on the impact of the release of the contractual service margin on insurance revenue and not on the impact on profit or loss of other components of an insurance contract liability. The example also assumes there are no other changes in expectations and ignores accretion of interest for simplicity

An entity with an annual reporting period ending on 31 December publishes half-yearly interim financial statements.

At 31 December 2023, the entity has issued a group of insurance contracts with a contractual service margin of CU1,200 and an expected coverage period of two years. The entity expects to provide coverage evenly over the coverage period and expects to incur claims in H2 2023 of CU300.

At the end of H1 2024, the entity increases its estimate of claims to be incurred in H2 of 2024 by CU200 to CU500. The entity adjusts (reduces) the related contractual service margin by CU200 and reduces the contractual service margin by CU250 for services provided in H1 (CU1,200 - CU200) / 4. At the end of H1 2024, the entity carries forward a contractual service margin of CU750.

The entity incurs claims in H2 2024 of CU300 (as originally expected).

Option A - the entity elects not to change the treatment of its previous estimates in subsequent interim financial statements and in the annual financial report

As a result of incurring claims in H2 2024 of CU300, the entity recognises a favourable experience adjustment in profit or loss (i.e., a credit to insurance service expenses) of CU200 in H2.

Illustration 83 – The contractual service margin and interim reporting (cont'd)

The entity releases CU250 from the contractual service margin to profit or loss (insurance revenue) in H2 and carries forward a contractual service margin of CU500 (CU750 - CU250) at 31 December 2024 in the H2 2024 interim as well as annual 2024 financial statements.

In summary, in 2024, the entity recognises CU500 as part of insurance revenue, a positive experience adjustment in profit or loss of CU200 and carries forward a contractual service margin of CU500 in both its interim financial statements for H2 2024, as well as its annual financial statements for that year.

Option B – the entity elects to change the treatment of its previous estimates in subsequent interim financial statements and in the annual financial report

If the entity does change its previous estimates, then the position at the end of the H2 2024 interims and the 2024 financial report is the cumulative result for the calendar year. Therefore, the impact on the annual financial statements is as follows:

- There is no experience adjustment in the year claims in 2024 are as expected at 31 December 2023.
- The entity would release CU600 from the contractual service margin to profit or loss in the calendar year 2024 and would carry forward a contractual service margin of CU600 (CU1,200 brought forward - CU600 release to P&L = CU600).

In summary, in 2024 the entity recognises CU600 as part of insurance revenue in 2024 and carries forward a contractual service margin of CU600 at 31 December 2024 instead of recognising insurance revenue of CU500 and a positive experience adjustment in insurance service expenses of CU200 and carrying forward a contractual service margin of CU500 under option A above.
16.Disclosure

One of the main objectives of IFRS 17 is to establish principles for the disclosure of insurance contracts which gives a basis for users of the financial statements to assess the effect that insurance contracts have on an entity's financial position, financial performance and cash flows.⁵⁵¹

Hence, the objective of the disclosure requirements is for an entity to disclose information in the notes that, together with the information provided in the statement of financial position, statement(s) of financial performance and statement of cash flows, gives a basis for users of financial statements to assess the effect of contracts within the scope of IFRS 17. To achieve that objective, an entity should disclose qualitative and quantitative information about:⁵⁵²

- The amounts recognised in its financial statements for contracts within the scope of IFRS 17 (see 16.1 below)
- Disclosures showing the effect of transition (see 16.2 below)
- The significant judgements, and changes in those judgements, when applying IFRS 17 (see 16.3 below)
- The nature and extent of risks arising from contracts within the scope of IFRS 17 (see 16.4 below)

The disclosure objective is supplemented with some specific disclosure requirements designed to help the entity satisfy this objective. By specifying the objective of the disclosures, the Board aims to ensure that entities provide the information that is most relevant for their circumstances and to emphasise the importance of communication to users of financial statements rather than compliance with detailed and prescriptive disclosure requirements. In situations in which the information provided to meet the specific disclosure requirements is not sufficient to meet the disclosure objective, the entity is required to disclose additional information necessary to achieve that objective.⁵⁵³

The Board used the disclosure requirements in IFRS 4, including the disclosure requirements in IFRS 7 that are incorporated in IFRS 4 by cross-reference, as a basis for the requirements in IFRS 17. This is because stakeholders have indicated that such disclosures provide useful information to users of financial statements for understanding the amount, timing and uncertainty of future cash flows from insurance contracts. The disclosure requirements brought forward from IFRS 4 include information about significant judgements in applying the standard as well as most of the disclosures about the nature and extent of risks that arise from insurance contracts.⁵⁵⁴ In addition, when developing IFRS 17, the Board identified key items it views as critical to understanding the financial statements of entities issuing insurance contracts, in the light of the requirement to update the measurement of insurance

- ⁵⁵¹ IFRS 17.1.
- ⁵⁵² IFRS 17.93.

⁵⁵³ IFRS 17.BC347.

⁵⁵⁴ IFRS 17.BC348.

contracts at each reporting date. Consequently, additional disclosures have been added requiring:⁵⁵⁵

- Reconciliations of opening to closing balances of the various components of the liability for remaining coverage and the liability for incurred claims
- An analysis of insurance revenue
- Information about initial recognition of insurance contracts in the statement of financial position
- An explanation of when an entity expects to recognise the contractual service margin remaining at the end of the reporting period in profit or loss
- An explanation of the total amount of insurance finance income or expenses in profit or loss and the composition and fair value of underlying items for contracts with direct participation features
- Information about the entity's approach to determining various inputs into the fulfilment cash flows
- The confidence level used to determine the risk adjustment for nonfinancial risk
- Information about yield curves used to discount cash flows that do not vary based on returns from underlying items
- Information about the effect of the regulatory framework in which the entity operates

The result of this is that the disclosure requirements of IFRS 17 are likely to be more extensive compared to the requirements of IFRS 4. They comprise forty paragraphs of the standard and many of these disclosures will not have previously been applied by insurance entities. In summary, complying with the disclosure requirements will be challenging.

IFRS 17 requires a reporting entity to consider the level of detail necessary to satisfy the disclosure objective and how much emphasis to place on each of the various requirements. Preparers are informed that if the mandatory disclosures required are not enough to meet the disclosure objective, additional information should be disclosed as necessary to meet that objective.⁵⁵⁶

An entity should aggregate or disaggregate information so that useful information is not obscured either by the inclusion of a large amount of insignificant detail or by the aggregation of items that have different characteristics.⁵⁵⁷

Preparers are also reminded of the requirements in IAS 1 relating to materiality and aggregation of information. IFRS 17 states that examples of aggregation bases that might be appropriate for information disclosed about insurance contracts include.⁵⁵⁸

- Type of contract (e.g., major product lines)
- Geographical area (e.g., country or region)
- Reportable segment, as defined in IFRS 8

⁵⁵⁵ IFRS 17.BC349.

⁵⁵⁶ IFRS 17.94.

⁵⁵⁷ IFRS 17.95.

⁵⁵⁸ IFRS 17.96.

How we see it

- The disclosure requirements of IFRS 17 are more extensive compared with those in IFRS 4, they comprise 40 paragraphs of the standard. Insurance entities have not applied many of these disclosures in the past, so complying with the disclosure requirements will be a challenge for data, systems and processes.
- Entities need to apply judgement in how they break down the required disclosures into separate lines of business, reportable segment, or geographical areas. Entities will need to determine this based on the objective of providing decision useful information to the users of the financial statements in accordance with the disclosure principles of IFRS 17.
- Applying the concept of materiality, a specific disclosure otherwise required by an IFRS Standard in the financial statements, need not be provided if the information resulting from that disclosure is not material. This is the case even if the IFRS Standard contains a list of specific requirements, or describes them as minimum requirements. In September 2017, the IASB published Practice statement 2 - making Materiality Judgements. This is a non-mandatory statement that entities may apply to assist in making materiality judgements.
- The provision of additional disclosures should be considered when compliance with the specific requirements in IFRS is insufficient to enable users of financial statements to understand the impact of particular transactions, other events and conditions on the entity's financial position and financial performance. This point is explicitly made in para 94 of IFRS 17.

16.1. Explanation of recognised amounts

The first part of the disclosure objective established by the standard is that an entity should disclose qualitative and quantitative information about the amounts recognised in its financial statements for contracts within its scope.⁵⁵⁹

The principal method by which the disclosure objective is achieved is by the disclosure of reconciliations that show how the net carrying amounts of contracts within the scope of IFRS 17 changed during the period because of cash flows and income and expenses recognised in the statement(s) of financial performance. Separate reconciliations should be disclosed for insurance contracts issued and reinsurance contracts held. An entity should adapt the requirements of the reconciliations described below to reflect the features of reinsurance contracts held that differ from insurance contracts issued; for example, the generation of expenses or reduction in expenses rather than revenue.⁵⁶⁰

Enough information should be provided in the reconciliations to enable users of financial statements to identify changes from cash flows and amounts that are

⁵⁵⁹ IFRS 17.93.

⁵⁶⁰ IFRS 17.98.

recognised in the statement(s) of financial performance. To comply with this requirement, an entity should: $^{\rm 561}$

- Disclose, in a table, the reconciliations set out at 16.1.1 to 16.1.2 below
- For each reconciliation, present the net carrying amounts at the beginning and at the end of the period, disaggregated into a total for portfolios of contracts that are assets and a total for portfolios of contracts that are liabilities, that equal the amounts presented in the statement of financial position as set out at 15.1 above.

The objective of the reconciliations detailed in 16.1.1 to 16.1.2 below is to provide different types of information about the insurance service result.⁵⁶²

16.1.1. Reconciliations required for contracts applying the general model

These reconciliations are required for all contracts other than those to which the premium allocation approach is applied including contracts with direct participation features.

Firstly, an entity must provide overall reconciliations from the opening to the closing balances separately for each of: $^{\rm 563}$

- The net liabilities (or assets) for the remaining coverage component, excluding any loss component
- Any loss component (see 9.8 above)
- The liabilities for incurred claims

Within the overall reconciliations above, an entity should separately disclose each of the following amounts related to insurance contract services, if applicable:⁵⁶⁴

- Insurance revenue
- Insurance service expenses, showing separately:
 - Incurred claims (excluding investment components) and other incurred insurance service expenses
 - Amortisation of insurance acquisition cash flows
 - Changes that relate to past service, i.e., changes in fulfilment cash flows relating to the liability for incurred claims
 - Changes that relate to future service, i.e., losses on onerous groups of contracts and reversals of such losses
- Investment components excluded from insurance revenue and insurance service expenses (combined with refunds of premiums unless refunds of premiums are presented as part of the cash flows in the period)

⁵⁶¹ IFRS 17.99.

⁵⁶² IFRS 17.102.

⁵⁶³ IFRS 17.100.

⁵⁶⁴ IFRS 17.103.

Below is an example of this overall reconciliation, based on an illustrative disclosure in the IASB's *IFRS 17 Effects Analysis*.

	Liability fo cove	r remaining rage		
	Excluding onerous contracts component	Onerous contracts component	Liabilities for incurred claims	Total
Insurance contract liabilities 2023	161,938	15,859	1,021	178,818
Insurance revenue	(9,856)			(9,856)
Insurance services expenses	1,259	(623)	7,985	8,621
Incurred claims and other expenses		(840)	7,945	7,105
Acquisition expenses	1,259			1,259
Changes that relate to future service: loss on onerous contracts and reversals of those losses		217		217
Changes that relate to past service: changes to liability for incurred claims			40	40
Investment components	(6,465)		6,465	0
Insurance service result	(15,062)	(623)	14,450	(1,235)
Insurance finance expenses	8,393	860	55	9,308
Total changes in the statement of comprehensive income	(6,669)	237	14,505	8,073
Cash flows				
Premiums received	33,570			33,570
Claims, benefits and other expenses paid			(14,336)	(14,336)
Acquisition cash flows paid	(401)			(401)
Total cash flows	33,169	-	(14,336)	18,833
Insurance contract liabilities 2024	188,438	16,096	1,190	205,724

Secondly, an entity should also disclose reconciliations from the opening to the closing balances separately for each of: $^{\rm 565}$

The estimates of the present value of the future cash flows

⁵⁶⁵ IFRS 17.101.

- The risk adjustment for non-financial risk
- ► The contractual service margin

Within these reconciliations, an entity should disclose the following amounts related to services, if applicable:⁵⁶⁶

- Changes that relate to future service, showing separately:
 - Changes in estimates that adjust the contractual service margin
 - Changes in estimates that do not adjust the contractual service margin, i.e., losses on groups of onerous contracts and reversals of such losses
 - The effects of contracts initially recognised in the period
- Changes that relate to current service, i.e.:
 - The amount of the contractual service margin recognised in profit or loss to reflect the transfer of services
 - The change in the risk adjustment for non-financial risk that does not relate to future service or past service
 - Experience adjustments, excluding amounts relating to the risk adjustment for non-financial risk included above
- Changes that relate to past service, i.e., changes in fulfilment cash flows relating to incurred claims

Below is an example of these reconciliations, based on an illustrative disclosure in the IASB's *IFRS 17* Effects Analysis:

	Estimates of the present value of future cash flows	Risk adjustment	Contractual service margin	Total
Insurance contact liabilities 2023	163,962	5,998	8,858	178,818
Changes that relate to current service	35	(604)	(923)	(1,492)
Contractual service margin recognised for service period			(923)	(923)
Risk adjustment recognised for the risk expired		(604)		(604)
Experience adjustments	35			35
Changes that relate to future service	(784)	1,117	(116)	217
Contracts initially recognised in the period	(2,329)	1,077	1,375	123
Changes in estimates reflected in the contractual service margin	1,452	39	(1,491)	-
Changes in estimates that result in onerous contact losses	93	1		94

⁵⁶⁶ IFRS 17.104.

	Estimates of the present value of future cash flows	Risk adjustment	Contractual service margin	Total
Changes that relate to past service	47	(7)		40
Adjustments to liabilities for incurred claims	47	(7)		40
Insurance service result	(702)	506	(1,039)	(1,235)
Insurance finance expenses	9.087	-	221	9,308
Total changes in the statement of comprehensive income	8,385	506	(818)	8,073
Cash flows	18,833			18,833
Insurance contract liabilities 2024	191,180	6,504	8,040	205,724

In addition, to complete the reconciliations above, an entity should also disclose separately each of the following amounts not related to services provided in the period, if applicable: 567

- Cash flows in the period, including:
 - Premiums received for insurance contracts issued (or paid for reinsurance contracts held)
 - Insurance acquisition cash flows
 - Incurred claims paid and other insurance service expenses paid for insurance contracts issued (or recovered under reinsurance contracts held), excluding insurance acquisition cash flows
- The effect of changes in the risk of non-performance by the issuer of reinsurance contracts held
- Insurance finance income or expense
- Any additional line items that may be necessary to understand the change in the net carrying amount of the insurance contracts

When an entity recognises an asset for insurance acquisition cash flows paid for existing or future groups of insurance contracts before those insurance contracts are recognised (see 7.3 above), it should disclose a reconciliation from the opening to the closing balance of assets recognised for those insurance acquisition cash flows. The information should be aggregated at a level which is consistent with that for the other reconciliations of insurance contracts discussed above.⁵⁶⁸

The reconciliation of the insurance acquisition cash flows above should disclose separately any recognition of impairment losses and reversals of impairment losses of the insurance acquisition cash flow assets.⁵⁶⁹

⁵⁶⁷ IFRS 17.105.

⁵⁶⁸ IFRS 17.105A.

⁵⁶⁹ IFRS 17.105B.

In respect of insurance revenue recognised in the period, entities need to provide the following analysis:⁵⁷⁰

- The amounts relating to the changes in the liability for remaining coverage as discussed at 15.2.1 above, separately disclosing:
 - The insurance service expenses incurred during the period
 - > The change in the risk adjustment for non-financial risk
 - The amount of the contractual service margin recognised in profit or loss because of the transfer of insurance contract services in the period
 - Other amounts, if any, for example, experience adjustments for premium receipts other than those that relate to future service
- The allocation of the portion of the premiums that relate to the recovery of insurance acquisition cash flow.

Below is an example of this insurance revenue analysis, based on an illustrative disclosure in the IASB's *IFRS 17 Effects Analysis*.

	2023
Amounts related to liabilities for remaining coverage	8,597
Expected incurred claims and other expenses	7,070
Contractual service margin for the service provided	923
Risk adjustment for the risk expired	604
Recovery of acquisition cash flows	1,259
Insurance revenue	9,856

The effect on the statement of financial position for insurance contracts issued and reinsurance contracts held that are initially recognised in the period, should be shown separately, disclosing the effect at initial recognition on:⁵⁷¹

- The estimates of the present value of future cash outflows, showing separately the amount of the insurance acquisition cash flows
- The estimates of the present value of future cash inflows
- The risk adjustment for non-financial risk
- The contractual service margin

In the reconciliation showing the effect of insurance contracts issued and reinsurance contracts held, there should be separate disclosure of:⁵⁷²

 Contracts acquired from other entities in transfers of insurance contracts or business combinations

⁵⁷⁰ IFRS 17.106.

⁵⁷¹ IFRS 17.107.

⁵⁷² IFRS 17.108.

Groups of contracts that are onerous

Below is an example of this analysis, based on an illustrative disclosure in the IASB's *IFRS 17 Effects Analysis*. The example shows insurance contracts issued only for an entity which has not acquired contracts in the period via transfers or business combinations.

	Total	Of which contracts acquired	Of which onerous contracts
Contracts initially recognised in 2023	1		
Estimates of the present value of futures cash inflows	(33,570)	(19,155)	(1,716)
Estimates of the present value of future cash outflows			
Insurance acquisition cash flows	401	122	27
Claims payable and other expenses	30,840	17,501	1,704
Risk adjustment	1,077	658	108
Contractual service margin	1,375	896	-
Total	123	22	123

Additionally, an entity should disclose *quantitatively* (emphasis added)when it expects to recognise the contractual service margin remaining at the end of the reporting period in profit or loss in appropriate time bands. Such information should be provided separately for insurance contracts issued and reinsurance contracts held.⁵⁷³

An entity is also required to disclose quantitatively, in appropriate time bands, when it expects to derecognise an asset for insurance acquisition cash flows.⁵⁷⁴

Frequently asked questions

Question 16-1: The submission questions the sequence to be applied to adjusting a loss component in a financial period when one experience adjustment that relates to future service would increase a loss component, while another would decrease it; and asks whether a gross disclosure should be provided applying paragraphs 103(b) and 104(a) of IFRS 17. [TRG meeting April 2019 – Agenda paper no. 02, Log S125]

In the example submitted, there was a premium experience adjustment related to future service that would increase a loss component and a change in fulfilment cash flows related to future service that would decrease a loss component. The IASB staff observed that IFRS 17 requires an entity to provide disclosure of changes that relate to future service separately from those related to current or past service and in the example submitted all changes relate to future service. That is, no sub-analysis of

⁵⁷³ IFRS 17.109.

⁵⁷⁴ IFRS 17.109A.

Frequently asked questions (cont'd)

the changes that relate to future service was required for the example included in the submission.

Question 16-2: How should the reconciliation of estimates of the present value of future cash flows applying paragraphs 101 and 104 of IFRS 17 for the annual reporting period be disclosed, considering the requirements in paragraph B137 of IFRS 17 relating to interim financial statements. [TRG meeting April 2019 – Agenda paper no. 02, Log S83]

The submission asks, for example, whether changes disclosed as relating to past service in an interim reporting period should be disclosed as changes relating to current service in the annual reporting. The IASB staff stated the amounts disclosed in the reconciliations in paragraphs 101 and 104 reflected the amounts included in the measurement of insurance contracts and that the description of the amount as relating to past or current service does not affect the measurement as both are treated in the same way when determining the fulfilment cash flows and any effect of changes in fulfilment cash flows on the contractual service margin.

How we see it

- The roll forward reconciliations are detailed analyses of movements in the carrying amounts of insurance contracts issued and reinsurance contracts held. They will provide more information and transparency to users than they currently receive from IFRS financial statements. An entity is required to provide analyses of the change in the carrying amount that view insurance contracts in two ways:
 - The building blocks view (present value of expected future cash flows, risk adjustment for non-financial risk, and the contractual service margin)
 - By type of insurance obligation (the liability for incurred claims and the liability for remaining coverage split between the loss component and the non-loss component)
- The reconciliations are two views of the same events in a reporting period. Entities need to decide to what extent they build the reconciliations from low-level detailed data on changes in the carrying amounts of insurance contracts maintained in a general ledger (and/or data warehouse) versus maintaining high-level data in the general ledger and taking a top-down approach to analysing movements and obtaining the required movements data from other sources. On one hand, a bottom-up approach to maintaining movement data in the general ledger/data warehouse represents a significant data and process challenge. On the other hand, a top-down approach risks an entity being unable to provide the analyses in a robust and timely way.

16.1.2. Information about contracts to which the entity applies the premium allocation approach

16.1.2.A. Accounting policies adopted for contracts applying the premium allocation approach

When an entity uses the premium allocation approach, it must disclose the following: $^{\rm 575}$

- Which of the criteria for the use of the premium allocation approach for insurance contracts issued and reinsurance contracts held it has satisfied
- Whether it makes an adjustment for the time value of money and the effect of financial risk for the liability for remaining coverage and the liability for incurred claims
- Whether it recognises insurance acquisition cash flows as expenses when it incurs those costs or amortises insurance acquisition cash flows over the coverage period

These choices are discussed at 10.1 and 10.4 above.

16.1.2.B. Reconciliations required for contracts applying the premium allocation approach

The reconciliations described below apply to contracts using the premium allocation approach. Most also apply for contracts using the general model (see 16.1.1 above). As with the general model, for each reconciliation, an entity should present the net carrying amounts at the beginning and at the end of the period, disaggregated into a total for portfolios of contracts that are assets and a total for portfolios of contracts that are liabilities, that equal the amounts presented in the statement of financial position as set out at 15.1 above.⁵⁷⁶

Overall reconciliations from the opening to the closing balances are required separately for each of: $^{\rm 577}$

- The net liabilities (or assets) for the remaining coverage component, excluding any loss component
- Any loss component (see 8.8 above)
- ► The liabilities for incurred claims with separate reconciliations for:
 - > The estimates of the present value of the future cash flows
 - The risk adjustment for non-financial risk

Within the overall reconciliations above, separate disclosure of each of the following amounts related to services, if applicable:⁵⁷⁸

- Insurance revenue
- Insurance service expenses, showing separately:
 - Incurred claims (excluding investment components) and other incurred insurance service expenses

⁵⁷⁵ IFRS 17.97.

⁵⁷⁶ IFRS 17.99.

⁵⁷⁷ IFRS 17.100.

⁵⁷⁸ IFRS 17.103.

- Amortisation of insurance acquisition cash flows
- Changes that relate to past service, i.e., changes in fulfilment cash flows relating to the liability for incurred claims
- Changes that relate to future service, i.e., losses on onerous groups of contracts and reversals of such losses
- Investment components excluded from insurance revenue and insurance service expenses (combined with refunds of premiums unless refunds of premiums are presented as part of the cash flows in the period)

Disclosure is also required of each of the following amounts that are not related to services provided in the period, if applicable:⁵⁷⁹

- Cash flows in the period, including:
 - Premiums received for insurance contracts issued (or paid for reinsurance contracts held)
 - Insurance acquisition cash flows
 - Incurred claims paid and other insurance service expenses paid for insurance contracts issued (or recovered under reinsurance contracts held), excluding insurance acquisition cash flows
- The effect of changes in the risk of non-performance by the issuer of reinsurance contracts held
- Insurance finance income or expenses
- Any additional line items that may be necessary to understand the change in the net carrying amount of the insurance contracts

The disclosures required when an entity recognises an asset for acquisition cash flows paid for existing or future groups of insurance contracts before those insurance contracts are recognised insurance acquisition cash flow assets also apply to contracts accounted for under the premium allocation approach (see 16.1.1 above).

16.1.3. Explanation of the total amount of insurance finance income or expenses in each reporting period

The total amount of insurance finance income or expenses in the reporting period must be disclosed and explained. In particular, an entity must explain the relationship between insurance finance income or expenses and the investment return on its assets, to enable users of its financial statements to evaluate the sources of finance income or expenses recognised in profit or loss and other comprehensive income.⁵⁸⁰

Specifically, for contracts with direct participation features, an entity must:⁵⁸¹

- Describe the composition of the underlying items and disclose their fair value.
- Disclose the effect of any adjustment to the contractual service margin in the current period as a result of the application of risk mitigation whereby a

⁵⁷⁹ IFRS 17.105.

⁵⁸⁰ IFRS 17.110.

⁵⁸¹ IFRS 17.111-113.

choice not to adjust the contractual service margin to reflect some or all of the changes in the effect of financial risk on the entity's share of underlying items for the effect of the time value of money and financial risks not arising from the underlying items (see section 12.3.6 above).

- Disclose, in the period when the entity changes the basis of disaggregation of insurance finance income or expense between profit or loss and other comprehensive income because of a change in whether it holds the underlying items (see 15.3.4 above):
 - The reason why the entity was required to change the basis of aggregation
 - The amount of any adjustment for each financial statement line item affected
 - The carrying amount of the group of insurance contracts to which the change applied at the date of the change

16.2. Transition amounts

An entity must provide disclosures that enable users of financial statements to identify the effect of groups of insurance contracts measured at the transition date when applying the modified retrospective approach (see section 17.4 below) or the fair value approach (see section 17.5) below on the contractual service margin and insurance revenue in subsequent periods. To achieve this, IFRS 17 requires various disclosures to be made each reporting period until the contracts which exist at transition have expired or been extinguished.

Hence, an entity must disclose the reconciliation of the contractual service margin and the amount of insurance revenue at 16.1.1 above separately for: 582

- Insurance contracts that existed at the transition date to which the entity has applied the modified retrospective approach
- Insurance contracts that existed at the transition date to which the entity has applied the fair value approach
- All other insurance contracts (i.e., including those to which the entity has accounted for fully)

In addition, for all periods in which disclosures are made for contracts that, on transition, were accounted for using either the modified retrospective approach or the fair value approach, an entity must explain how it determined the measurement of insurance contracts at the transition date. The purpose of this is to enable users of financial statements to understand the nature and significance of the methods used and judgements applied in determining the transition amounts.⁵⁸³

An entity that chooses to disaggregate insurance finance income or expenses between profit or loss and other comprehensive income applies the requirements discussed at section 17.4.4 below (for the modified retrospective approach) or 17.5.1 below (for the fair value approach). This is to determine the cumulative difference between the insurance finance income or expenses that would have been recognised in profit or loss and the total

⁵⁸² IFRS 17.114.

⁵⁸³ IFRS 17.115.

insurance finance income or expenses at the transition date for the groups of insurance contracts to which the disaggregation applies. For all periods in which amounts determined applying these alternative transitional approaches exist, the entity should disclose a reconciliation of the opening to the closing balance of the cumulative amounts included in other comprehensive income for financial assets measured at fair value through other comprehensive income related to the groups of insurance contracts. The reconciliation should include, for example, gains or losses recognised in other comprehensive income in the period and gains or losses previously recognised in other comprehensive income in previous periods reclassified in the period to profit or loss.⁵⁸⁴

How we see it

Transition disclosures will require considerable effort. Entities need to think about their solutions for identifying and tracking these amounts carefully. They will need to continue separately disclosing the contractual service margin for contracts in force at transition in the years after transition, and must consider this requirement when building their financial reporting processes and systems. The effort of tracking the contractual service margins for groups of contracts present at transition that are not determined on a fully retrospective basis needs to be considered together with the effort of applying a fully retrospective approach at transition.

16.3. Significant judgements made in applying IFRS 17

IAS 1 requires that an entity should disclose the judgements that management has made in the process of applying the entity's accounting policies and that have the most significant effect on the amounts recognised in the financial statements.⁵⁸⁵

Consistent with IAS 1, the second part of the disclosure objective established by IFRS 17 is that an entity should disclose the significant judgements and changes in judgements made by an entity in applying the standard.⁵⁸⁶

Specifically, an entity must disclose the inputs, assumptions and estimation techniques it has used, including:⁵⁸⁷

- The methods used to measure insurance contracts within the scope of IFRS 17 and processes to estimate the inputs to those methods. Unless impracticable, an entity must also provide quantitative information about those inputs
- Any changes in methods and processes for estimating inputs used to measure contracts, the reason for each change, and the type of contracts affected

⁵⁸⁴ IFRS 17.116.

⁵⁸⁵ IAS 1.122.

⁵⁸⁶ IFRS 17.93(b).

⁵⁸⁷ IFRS 17.117.

- ▶ To the extent not covered above, the approach used:
 - To distinguish changes in estimates of future cash flows arising from exercising discretion from other changes in estimates of future cash flows for contracts without direct participation features
 - To determine the risk adjustment for non-financial risk, including whether changes in the risk adjustment for non-financial risk are disaggregated into an insurance service component and an insurance finance component, or are presented in full in the insurance service result
 - To determine discount rates
 - To determine investment components
 - To determine the relative weighting of the benefits provided by insurance coverage and investment-return service (for insurance contracts without direct participation features) or insurance coverage and investment-related service (for insurance contracts with direct participation features).

If an entity chooses to disaggregate insurance finance income or expenses into amounts presented in profit or loss and in other comprehensive income (see section 15.3.1 to 15.3.4 above), it must disclose an explanation of the methods used to determine the insurance finance income or expenses recognised in profit or loss.⁵⁸⁸

An entity must also disclose the confidence level used to determine the risk adjustment for non-financial risk. If the entity uses a technique other than the confidence level technique, it must disclose:

- The technique used
- ▶ The confidence level corresponding to the results of that technique⁵⁸⁹

An entity must disclose the yield curve (or range of yield curves) used to discount cash flows that do not vary based on the returns on underlying items. When an entity provides this disclosure in aggregate for a number of groups of insurance contracts, it must provide such disclosures in the form of weighted averages, or relatively narrow ranges.⁵⁹⁰

16.4. Disclosure of accounting policies

Unlike IFRS 4, IFRS 17 does not contain an explicit requirement for an insurer's accounting policies for insurance contracts and related liabilities, income and expense to be disclosed. However, IAS 1 requires an entity to disclose its significant accounting policies comprising:⁵⁹¹

- The measurement basis (or bases) used in preparing the financial statements
- The other accounting policies used that are relevant to an understanding of the financial statements

⁵⁸⁸ IFRS 17.118.

⁵⁸⁹ IFRS 17.119.

⁵⁹⁰ IFRS 17.120.

⁵⁹¹ IAS 1.117.

In addition, certain specific disclosures concerning accounting policy choices in respect of discounting and insurance acquisition cash flows are required when the premium allocation approach is used (see16.1.2.A above).

IFRS 17 contains a number of specific accounting policy elections, the exercise of which (or not) may be relevant to an understanding of the financial statements. Some of these are contained in the table below. Accounting policy elections applicable only on transition are discussed at 17 below.

Accounting policy choice	Unit of Account	Revocable?
Election to apply IFRS 17 or IAS 32/IFRS 9 to financial guarantee contracts if previously asserted to be insurance contracts (see 2.3.1.B above)	Individual contract	No
Election to apply either IFRS 15 or IFRS 17 to certain fixed-fee service contracts (see 2.3.2 above)	Individual contract	No
Election to apply either IFRS 17 or IFRS 9 to certain Ioan contracts that only transfer insurance risk on settlement (see 2.3.3 above)	Accounting policy at level of portfolio of contracts	No
Period of cohort - group of contracts can be grouped into any period of one year or less (see 6.2.2 above)	IAS 8 applies	IAS 8 applies
Accretion of interest on insurance acquisition cash flows - voluntary election (see 7.3 above)	IAS 8 applies	IAS 8 applies
Use of the premium allocation approach (see 10 above)	Group of contracts	No - unless contract modified (see 13.1 above).
Premium allocation approach - election to expense insurance acquisition cash flows as incurred for contracts where coverage period of each contract in group is no more than one year as opposed to including within the liability for remaining coverage (see 10.2 above)	Group of contracts	No

Accounting policy choice	Unit of Account	Revocable?
Premium allocation approach - election to not adjust the liability for remaining coverage to reflect the time value of money and effect of financial risk if, on initial recognition, the time between providing services and premium due date is no more than one year (see 10.2 above).	Group of contracts	No
Premium allocation approach - election not to adjust the liability for incurred claims to reflect the time value of money and effect of financial risk if the cash flows are expected to be paid or received in one year or less from the date the claims are incurred (see 10.5 above).	Group of contracts	Yes - if eligibility criteria failed in subsequent periods
Use of risk mitigation for eligible contracts applying the variable fee approach (see 12.3.5 above)	Group of contracts	lf, and only if, conditions cease to apply (see 12.3.5 above).
Present changes in the risk adjustment for non- financial risk in insurance service expenses or disaggregate between insurance service expenses and insurance finance income or expenses (see 15.2.2 above)	IAS 8 applies	IAS 8 applies
Present insurance finance income or expenses in profit or loss or disaggregate between profit or loss and other comprehensive income (see 15.3.1 above)	Portfolio of contracts	Yes - provided change satisfies IAS 8 criteria. If underlying items now held or no longer held by variable fee approach change is compulsory (see 12.3.6 above)
Election as to whether to change the treatment of accounting estimates made in previous interim financial statements when applying IFRS 17 in subsequent	Reporting entity	IAS 8 applies

Accounting policy choice	Unit of Account	Revocable?
interim financial statements and in the annual reporting period (see 15.4 above)		
Net or gross presentation of reinsurance held in profit or loss (see 15 above)	Reporting entity	IAS 8 applies

16.5. Disclosure about the nature and extent of risks

The third part of the disclosure objective established by IFRS 17 is that an entity is required to disclose the nature and extent of the risks from contracts within the scope of the standard. 592

To comply with this objective, an entity should disclose information that enables users of its financial statements to evaluate the nature, amount, timing and uncertainty of future cash flows that arise from contracts within the scope of IFRS 17.⁵⁹³

The disclosures detailed below are considered to be those that would normally be necessary to meet this requirement. These disclosures focus on the insurance and financial risks that arise from insurance contracts and how they have been managed. Financial risks typically include, but are not limited to, credit risk, liquidity risk and market risk.⁵⁹⁴ Many similar disclosures were contained in IFRS 4, often phrased to the effect that an insurer should make disclosures about insurance contracts assuming that insurance contracts were within the scope of IFRS 7. The equivalent disclosures required by IFRS 17 are tailored to the recognition and measurement of the standard and do not cross-refer to IFRS 7.

For each type of risk arising from contracts within the scope of IFRS 17, an entity must disclose: $^{\rm 595}$

- The exposures to risks and how they arise
- The entity's objectives, policies and processes for managing the risks and methods used to measure them
- Any changes in the above from the previous period.

An entity should also disclose, for each type of risk:596

- Summary quantitative information about its exposure to that risk at the end of the reporting period, with disclosure based on information provided internally to the entity's key management personnel
- The disclosures detailed at 16.5.1 to 16.5.5 below, to the extent not provided by the summary quantitative information required above

⁵⁹² IFRS 17.93.

⁵⁹³ IFRS 17.121.

⁵⁹⁴ IFRS 17.122.

⁵⁹⁵ IFRS 17.124.

⁵⁹⁶ IFRS 17.125.

If the information disclosed about an entity's exposure to risk at the end of the reporting period is not representative of its exposure to risk during the period, the entity should disclose that fact, the reason why the period-end exposure is not representative, and further information that is representative of its risk exposure during the period.⁵⁹⁷

Disclosure of an entity's objectives, policies and processes for managing risks and the methods used to manage the risk provides an additional perspective that complements information about contracts outstanding at a particular time and might include information about:

- The structure and organisation of the entity's risk management function(s), including a discussion of independence and accountability
- The scope and nature of its risk reporting or measurement systems, such as internal risk measurement models, sensitivity analyses, scenario analysis, and stress testing, and how these are integrated into the entity's operating activities. Useful disclosures might include a summary description of the approach used, associated assumptions and parameters (including confidence intervals, computation frequencies and historical observation periods) and strengths and limitations of the approach
- The processes for accepting, measuring, monitoring and controlling insurance risks and the entity's underwriting strategy to ensure that there are appropriate risk classification and premium levels
- The extent to which insurance risks are assessed and managed on an entitywide basis
- The methods employed to limit or transfer insurance risk exposures and avoid undue concentrations of risk, such as retention limits, inclusion of options in contracts, and reinsurance
- Asset and liability management (ALM) techniques
- The processes for managing, monitoring and controlling commitments received (or given) to accept (or contribute) additional debt or equity capital when specified events occur

Additionally, it might be useful to provide disclosures both for individual types of risks insured and overall. These disclosures might include a combination of narrative descriptions and specific quantified data, as appropriate to the nature of the contracts and their relative significance to the insurer.

Quantitative information about exposure to insurance risk might include:

- Information about the nature of the risk covered, with a brief summary description of the class (such as annuities, pensions, other life insurance, motor, property and liability)
- Information about the general nature of participation features whereby policyholders share in the performance (and related risks) of individual contracts or pools of contracts or entities. This might include the general nature of any formula for the participation and the extent of any discretion held by the insurer

⁵⁹⁷ IFRS 17.123.

Information about the terms of any obligation or contingent obligation for the insurer to contribute to government or other guarantee funds established by law which are within the scope of IAS 37.

16.5.1. Concentrations of risk

An entity should disclose information about concentrations of risk arising from contracts within the scope of IFRS 17, including a description of how the entity determines the concentrations, and a description of the shared characteristic that identifies each concentration (for example, the type of insured event, industry, geographical area, or currency).

It is further explained that concentrations of financial risk might arise, for example, from interest-rate guarantees that come into effect at the same level for a large number of contracts. Concentrations of financial risk might also arise from concentrations of non-financial risk, e.g., if an entity provides product liability protection to pharmaceutical companies and also holds investments in those companies (i.e., a sectoral concentration).⁵⁹⁸

Other concentrations could arise from, for example:

- A single insurance contract, or a small number of related contracts, for example when an insurance contract covers low-frequency, high-severity risks such as earthquakes
- Single incidents that expose an insurer to risk under several different types of insurance contract. For example, a major terrorist incident could create exposure under life insurance contracts, property insurance contracts, business interruption and civil liability
- Exposure to unexpected changes in trends, for example unexpected changes in human mortality or in policyholder behaviour
- Exposure to possible major changes in financial market conditions that could cause options held by policyholders to come into the money. For example, when interest rates decline significantly, interest rate and annuity guarantees may result in significant losses
- Significant litigation or legislative risks that could cause a large single loss, or have a pervasive effect on many contracts
- Correlations and interdependencies between different risks
- Significant non-linearities, such as stop-loss or excess of loss features, especially if a key variable is close to a level that triggers a material change in future cash flows
- Geographical concentrations

Disclosure of concentrations of insurance risk might include a description of the shared characteristic that identifies each concentration and an indication of the possible exposure, both before and after reinsurance held, associated with all insurance liabilities sharing that characteristic.

Disclosure of the historical performance of low-frequency, high-severity risks might be one way to help users assess cash flow uncertainty associated with those risks. For example, an insurance contract may cover an earthquake that

⁵⁹⁸ IFRS 17.127.

is expected to happen, on average, once every 50 years. If the earthquake occurs during the current reporting period, the insurer will report a large loss. If the earthquake does not occur during the current reporting period, the insurer will report a profit. Without adequate disclosure of long-term historical performance, it could be misleading to report 49 years of large profits, followed by one large loss, because users may misinterpret the insurer's long-term ability to generate cash flows over the complete cycle of 50 years. Therefore, describing the extent of the exposure to risks of this kind and the estimated frequency of losses might be useful. If circumstances have not changed significantly, disclosure of the insurer's experience with this exposure may be one way to convey information about estimated frequencies. However, there is no specific requirement to disclose a probable maximum loss (PML) in the event of a catastrophe.

16.5.2. Insurance and market risks - sensitivity analysis

An entity should disclose information about sensitivities to changes in risk variables arising from contracts within the scope of IFRS 17. To comply with this requirement, an entity should disclose:⁵⁹⁹

- A sensitivity analysis that shows how profit or loss and equity would have been affected by changes in risk variables that were reasonably possible at the end of the reporting period:
 - For insurance risk showing the effect for insurance contracts issued, before and after risk mitigation by reinsurance contracts held
 - For each type of market risk in a way that explains the relationship between the sensitivities to changes in risk variables arising from insurance contracts and those arising from financial assets held by the entity
- > The methods and assumptions used in preparing the sensitivity analysis
- Changes from the previous period in the methods and assumptions used in preparing the sensitivity analysis, and the reasons for such changes

Market risk comprises three types of risk: currency risk, interest rate risk and other price risk. 600

If an entity prepares a sensitivity analysis (e.g., an embedded value analysis) that shows how amounts different from those above are affected by changes in risk variables and uses that sensitivity analysis to manage risks arising from contracts within the scope of IFRS 17, it may use that sensitivity analysis in place of the analysis specified above. The entity should also disclose:⁶⁰¹

- An explanation of the method used in preparing such a sensitivity analysis and of the main parameters and assumptions underlying the information provided
- An explanation of the objective of the method used and of any limitations that may result in the information provided

⁵⁹⁹ IFRS 17.128.

⁶⁰⁰ IFRS 7 Appendix A.

⁶⁰¹ IFRS 17.129.

16.5.3. Insurance risk - claims development

An entity should disclose actual claims compared with previous estimates of the undiscounted amount of the claims (i.e., claims development). The disclosure regarding claims development should start with the period when the earliest material claim(s) arose and for which there is still uncertainty about the amount and timing of the claims payments at the end of the reporting period. But the disclosure is not required to start more than 10 years before the end of the reporting period (although there is transitional relief for first-time adopters - see 17.2.1.A below). An entity is not required to disclose information about the development of claims for which uncertainty about the amount and timing of the claims for which uncertainty about the amount and timing of the claims payments is typically resolved within one year.⁶⁰²

An entity should reconcile the disclosure about claims development with the aggregate carrying amount of the groups of insurance contracts which comprise the liabilities for incurred claims (see 16.1.1 and 16.1.2 above).⁶⁰³ Hence, only incurred claims are required to be compared with previous estimates and not any amounts within the liability for remaining coverage. In this context, incurred claims appear to include those arising from reinsurance contracts held as well as those arising from insurance and reinsurance contracts issued.⁶⁰⁴

These requirements apply to incurred claims arising from all models (i.e., general model, premium allocation approach and variable fee approach). However, because insurers need not disclose the information about claims for which uncertainty about the amount and timing of payments is typically resolved within a year, it is unlikely that many life insurers will need to give the disclosure.

The claims development table is required to be shown undiscounted. Hence, any discounting adjustment will be a reconciling item between the claims development table and the carrying amount of the liability for incurred claims. In addition, given the long tail nature of many non-life insurance claims liabilities, it is likely that many non-life insurers will have claims outstanding at the reporting date that are more than ten years old and which will also need to be included in a reconciliation of the claims development table to the carrying amount of the liability for incurred claims.

IFRS 17 does not contain an illustrative example of a claims development table (or, indeed, specifically require disclosure in a tabular format). The example below is based on an illustrative example contained in the Implementation Guidance to IFRS 4. This example, as a simplification for illustration purposes, presents five years of claims development information by underwriting year, although the standard itself requires ten (subject to the transitional relief upon first-time adoption) and assumes no reinsurance held. Other formats are permitted, including, for example, presenting information by accident year or reporting period rather than underwriting year.

⁶⁰² IFRS 17.130.

⁶⁰³ IFRS 17.130.

Illustration 84 – Disclosure of claims development

The top half of the table shows how the insurer's estimates of incurred claims for each underwriting year develop over time. For example, at the end of 2019, the insurer's estimate of the undiscounted liability for incurred claims that it would pay for insured events relating to insurance contracts underwritten in 2019 was CU680. By the end of 2020, the insurer had revised the estimate of incurred claims (both those paid and those still to be paid) to CU673.

The lower half of the table reconciles the cumulative incurred claims to the amount appearing in the statement of financial position. First, the cumulative payments are deducted to give the cumulative unpaid claims for each year on an undiscounted basis. Second, the effect of discounting is deducted to give the carrying amount in the statement of financial position.

Incurred claim year	2019	2020	2021	2022	2023	Total
	CU	CU	CU	CU	CU	CU
Estimate of incurred claims:						
At end of underwriting year	680	790	823	920	968	
One year later	673	785	840	903		
Two years later	692	776	845			
Three years later	697	771				
Four years later	702					
Estimate of incurred claims	702	771	845	903	968	
Cumulative payments	(702)	(689)	(570)	(350)	(217)	
	-	82	275	553	751	1,661
Effect of discounting	-	(14)	(68)	(175)	(265)	(562)
Liabilities for which uncertainty is expected to be settled within one year						20
Liabilities for incurred claims recognised in the statement of financial position	_	68	207	378	486	1,119

How we see it

IFRS 17 does not address the presentation in the claims development table of:

- Exchange differences associated with insurance liabilities arising on retranslation (e.g., whether previous years' incurred claims should be retranslated at the current reporting period date)
- Claims liabilities acquired in a business combination or transfer (as discussed at 14.2 above, for contracts acquired in their settlement period, claims are incurred only when the financial effect becomes certain)
- Claims liabilities disposed of in a business disposal or transfer
- Whether claims should include expenses or could be defined as comprising claims payment amounts only
- Whether claims development should be provided on both a gross and net of reinsurance basis.

As IFRS 17 is silent on these matters, a variety of treatments would appear to be permissible, provided they are adequately explained to the users of the financial statements and consistently applied in each reporting period.

16.5.4. Credit risk - other information

For credit risk that arises from contracts within the scope of IFRS 17, an entity should disclose: 605

- The amount that best represents its maximum exposure to credit risk at the end of the reporting period, separately for insurance contracts issued and reinsurance contracts held
- Information about the credit quality of reinsurance contracts held that are assets.

Credit risk is defined in IFRS 7 as 'the risk that one party to a financial instrument will fail to discharge an obligation and cause the other party to incur a financial loss'. IFRS 17 provides no further detail about what is considered to be the maximum exposure to credit risk for an insurance contract or reinsurance contract held at the end of the reporting period (such as whether it is the maximum possible loss, the maximum probable loss or the fulfilment cash flows). The equivalent IFRS 7 requirement for financial instruments requires disclosure of credit risk gross of collateral or other credit enhancements.⁶⁰⁶ However, IFRS 17 does not specify that the maximum credit risk should be disclosed gross of collateral or other credit enhancements.

⁶⁰⁵ IFRS 17.131. ⁶⁰⁶ IFRS 7.35K(a). Information about the credit quality of reinsurance could be provided by an analysis based on credit risk rating grades.

16.5.5. Liquidity risk - other information

For liquidity risk arising from contracts within the scope of IFRS 17, an entity should disclose:⁶⁰⁷

- A description of how it manages the liquidity risk
- Separate maturity analyses for portfolios of insurance contracts issued that are liabilities and portfolios of reinsurance contracts held that are liabilities that show, as a minimum, net cash flows of the portfolios for each of the first five years after the reporting date and in aggregate beyond the first five years. An entity is not required to include in these analyses liabilities for remaining coverage measured applying the premium allocation approach. The analyses may take the form of:
 - An analysis by the estimated timing of the remaining contractual undiscounted net cash flows

Or

- An analysis by the estimated timing of the estimates of the present value of the future cash flows
- The amounts that are payable on demand, explaining the relationship between such amounts and the carrying amount of the related portfolios of contracts, if not disclosed in the maturity analysis above.

There is no equivalent disclosure required for portfolios of insurance contracts and reinsurance contracts held that are in an asset position.

IFRS 7 does not contain an equivalent requirement to disclose 'amounts that are payable on demand'. As such, the nature of this requirement in IFRS 17 is not entirely clear (i.e., whether it is intended to include gross liabilities payable at the reporting date in respect of portfolios of insurance contracts and reinsurance assets held that are assets or whether the requirement is intended to show only those net cash outflows payable at the reporting date included within the maturity analysis).

16.5.6. Regulatory disclosures

Most insurance entities are exposed to externally imposed capital requirements. Therefore, the IAS 1 disclosures in respect of these requirements are likely to be applicable.

Where an entity is subject to externally imposed capital requirements, disclosure must be made of the nature of these requirements and how these requirements are incorporated into the management of capital. Whether or not these requirements have been complied with in the reporting period and, where they have not been complied with, the consequences of such non-compliance must also be disclosed.⁶⁰⁸

⁶⁰⁷ IFRS 17.132.

⁶⁰⁸ IAS 1.135.

Many insurance entities operate in several jurisdictions. Where an aggregate disclosure of capital requirements and how capital is managed would not provide useful information or distorts a financial statement user's understanding of an entity's capital resources, separate information should be disclosed for each capital requirement to which an entity is subject.⁶⁰⁹

In addition to the requirements of IAS 1, an entity should disclose information about the effect of the regulatory frameworks in which it operates, for example, minimum capital requirements or required interestrate guarantees.⁶¹⁰ These extra disclosures do not contain an explicit requirement for an insurer to quantify its regulatory capital requirements. The IASB considered whether to add a requirement for insurers to quantify regulatory capital on the grounds that such disclosures might be useful for all entities operating in a regulated environment. However, the Board was concerned about developing such disclosures in isolation in a project on accounting for insurance contracts that would go beyond the existing requirements in IAS 1. Accordingly, the Board decided to limit the disclosures about regulation to those set out above.⁶¹¹

Additionally, if an entity includes contracts within the same group which would have been in different groups only because law or regulation specifically constrains the entity's practical ability to set a different price or level of benefits for policyholders with different characteristics (see 6 above), it should disclose that fact.⁶¹²

16.5.7. Disclosures required by IFRS 7 and IFRS 13

Contracts within the scope of IFRS 17 are not excluded from the scope of IFRS 13. Therefore, any of those contracts measured at fair value are also subject to the disclosures required by IFRS 13. IFRS 17, however, does not require contracts within its scope to be measured at fair value. In addition, all contracts within the scope of IFRS 17 are excluded from the scope of IFRS 7.⁶¹³ Under IFRS 4, investment contracts with a discretionary participation features were within the scope of IFRS 7.

However, IFRS 7 applies to:614

- Derivatives that are embedded in contracts within the scope of IFRS 17, if IFRS 9 requires the entity to account for them separately
- Investment components that are separated from contracts within the scope of IFRS 17, if IFRS 17 requires such separation

16.5.8. Key performance indicators

IFRS 17 does not require disclosure of key performance indicators. However, such disclosures might be a useful way for an insurer to explain its financial performance during the period and to give an insight into the risks arising from insurance contracts.

⁶⁰⁹ IAS 1.136.

⁶¹⁰ IFRS 17.126.

⁶¹¹ IFRS 17.BC369-371.

⁶¹² IFRS 17.126.

⁶¹³ IFRS 7.3(d).

⁶¹⁴ IFRS 7.3(d).

17. Effective date and transition

17.1. Effective date

An entity should apply IFRS 17 for annual reporting periods beginning on or after 1 January 2023.⁶¹⁵ When IFRS 17 is applied, IFRS 4 is withdrawn. ⁶¹⁶

If an entity applies IFRS 17 earlier than reporting periods beginning on or after 1 January 2023 it should disclose that fact. However, early application is permitted only for entities that also apply IFRS 9 on or before the date of initial application of IFRS 17. ⁶¹⁷

For the purposes of the transition requirements discussed at 17.2 below:⁶¹⁸

- The date of initial application is the beginning of the annual reporting period in which an entity first applies IFRS 17 (i.e., 1 January 2023 for an entity first applying the standard with an annual reporting period ending 31 December 2023)
- The transition date is the beginning of the annual reporting period immediately preceding the date of initial application (i.e., 1 January 2022 for an entity first applying the standard with an annual reporting period ending 31 December 2023 which reports only one comparative period)

17.2. Transition - general requirements

An entity should apply IFRS 17 retrospectively from the transition date unless: $^{\rm 619}$

Impracticable

Or

The entity chooses to apply the fair value approach for a group of insurance contracts with direct participation features (to which it could apply IFRS 17 retrospectively) when risk mitigation has been applied prospectively to the group from the transition date and the entity has used derivatives, non-derivative financial instruments measured at fair value through profit or loss, or reinsurance contracts held or to mitigate financial risk arising from that group of contracts before transition date.⁶²⁰

Notwithstanding the requirement for retrospective application, if it is impracticable (as defined in IAS 8), to apply IFRS 17 retrospectively for a group of insurance contracts, an entity should apply one of the two following approaches instead:⁶²¹

- A modified retrospective approach (see 17.4 below)
- Or

⁶¹⁵ IFRS 17.C1.
⁶¹⁶ IFRS 17.C34.
⁶¹⁷ IFRS 17.C1.
⁶¹⁸ IFRS 17.C2.
⁶¹⁹ IFRS 17.C3.
⁶²⁰ IFRS 17.C5A.
⁶²¹ IFRS 17.C5.

A fair value approach (see 17.5 below)

An entity should also apply either the modified retrospective approach or the fair value approach to measure an asset for insurance acquisition cash flows if, and only if, it is impracticable to identify, recognise and measure any assets for insurance acquisition cash flows retrospectively.⁶²²

IAS 8 states that applying a requirement is 'impracticable' when an entity cannot apply it after making every reasonable effort to do so.⁶²³

The Board permitted these alternative options to the full retrospective approach on the grounds that measuring the remaining amount of the contractual service margin for contracts acquired in prior periods, as well as the information needed in the statement of financial performance in subsequent periods, was likely to be challenging for preparers. This is because these amounts reflect a revision of estimates for all periods after the initial recognition of a group of contracts.⁶²⁴ In the Board's opinion, measuring the following amounts needed for retrospective application would often be impracticable:⁶²⁵

- > The estimates of cash flows at the date of initial recognition
- The risk adjustment for non-financial risk at the date of initial recognition
- The changes in estimates that would have been recognised in profit or loss for each accounting period because they did not relate to future service, and the extent to which changes in the fulfilment cash flows would have been allocated to the loss component
- The discount rates at the date of initial recognition
- The effect of changes in discount rates on estimates of future cash flows for contracts for which changes in financial assumptions have a substantial effect on the amounts paid to policyholders

The choice of applying either a modified retrospective approach or a fair value approach exists separately for each group of insurance contracts when it is impracticable to apply IFRS 17 retrospectively to that group. An entity is permitted to use either of these two methods although use of the modified retrospective approach is conditional on the availability of reasonable and supportable information.⁶²⁶

Within the two permitted methods there are also measurement choices available depending on the level of prior year information. Consequently, there is likely to be considerable diversity of practice across entities in calculating the contractual service margin at transition date. In turn, this will result in potentially different releases of the contractual service margin (i.e., different profit) for similar types of contract in subsequent accounting periods. The Board has acknowledged that the choice of transition methods results in a lack of comparability of transition amounts.⁶²⁷ This explains why the Board included a requirement for disclosures that track the effects of the modified

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<sup>622</sup> IFRS 17.C5B.
<sup>623</sup> IAS 8.5.
<sup>624</sup> IFRS 17.BC377.
<sup>625</sup> IFRS 17.BC378.
<sup>626</sup> IFRS 17.C6(a).
<sup>627</sup> IFRS 17.BC373.
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retrospective approach and the fair value approach on the contractual service margin and insurance revenue in future periods (see 16.2 above).

It is observed in the Basis for Conclusions that no simplification has been provided for contracts that have been derecognised before transition. This is because the Board considers that reflecting the effect of contracts derecognised before the transition date on the remaining contractual service margin was necessary to provide a faithful representation of the remaining profit of the group of insurance contracts.⁶²⁸

An overview of the transition methods is illustrated below:



¹An entity eligible to apply the full retrospective approach can also elect to use the fair value approach for a group of insurance contracts with direct participation features when risk mitigation has been applied prospectively to the group from the transition date.

Illustration 85 – Guidance on meaning of 'impracticable'

IAS 8 does not require the restatement of prior periods following a change in accounting policy or the correction of material errors if such a restatement is impracticable.

The standard devotes a considerable amount of guidance to discussing what 'impracticable' means for these purposes.

The standard states that applying a requirement is impracticable when an entity cannot apply it after making every reasonable effort to do so. It goes on to note that, for a particular prior period, it is impracticable to apply a change in an accounting policy retrospectively or to make a retrospective restatement to correct an error if:

The effects of the retrospective application or retrospective restatement are not determinable

⁶²⁸ IFRS 17.BC390.

Illustration 85 - Guidance on meaning of 'impracticable' (cont'd)

The retrospective application or retrospective restatement requires assumptions about what management's intent would have been in that period

Or

- The retrospective application or retrospective restatement requires significant estimates of amounts and it is impossible to distinguish objectively information about those estimates that:
- Provides evidence of circumstances that existed on the date(s) as at which those amounts are to be recognised, measured or disclosed
- Would have been available when the financial statements for that prior period were authorised for issue from other information.

An example of a scenario covered by the first bullet above, as set out in the standard, is that, in some circumstances, it may impracticable to adjust comparative information for one or more prior periods to achieve comparability with the current period because data may not have been collected in the prior period(s) in a way that allows either retrospective application of a new accounting policy (or its prospective application to prior periods) or retrospective restatement to correct a prior period error, and it may be impracticable to recreate the information.

IAS 8 observes that it is frequently necessary to make estimates in applying an accounting policy and that estimation is inherently subjective, and that estimates may be developed after the reporting period. Developing estimates is potentially more difficult when retrospectively applying an accounting policy or making a retrospective restatement to correct a prior period error, because of the longer period of time that might have passed since the affected transaction, other event or condition occurred.

However, the objective of estimates related to prior periods remains the same as for estimates made in the current period, namely, for the estimate to reflect the circumstances that existed when the transaction, other event or condition occurred. Hindsight should not be used when applying a new accounting policy to, or correcting amounts for, a prior period, either in making assumptions about what management's intentions would have been in a prior period or estimating the amounts recognised, measured or disclosed in a prior period. However, the fact that significant estimates are frequently required when amending comparative information presented for prior periods does not prevent reliable adjustment or correction of the comparative information.

Therefore, retrospectively applying a new accounting policy or correcting a prior period error requires distinguishing information that:

- Provides evidence of circumstances that existed on the date(s) as at which the transaction, other event or condition occurred; and
- Would have been available when the financial statements for that prior period were authorised for issue, from other information. The standard states that for some types of estimates, it is impracticable to distinguish these types of information. When retrospective application or retrospective restatement would require making a significant estimate for which it is impossible to distinguish these two types of information, it is impracticable to apply the new accounting policy or correct the prior period error retrospectively.

17.2.1. Transitional relief and prohibition - all entities

IFRS 17 provides disclosure exemptions for all entities, a prohibition from applying risk mitigation retrospectively prior to the transition date and measurement exemptions or modifications on transition. Consequential amendments to IFRS 3 provide transitional relief for business combinations within the scope of IFRS 3 prior to the date of initial application of IFRS 17.

17.2.1.A. Disclosure relief

IFRS 17 contains the following disclosure relief on transition:

- An entity is exempt from the IAS 8 requirement to present the amount of the adjustment resulting from applying IFRS 17 affecting each financial line item to either the current period or each prior period presented and the impact of applying IFRS 17 in those periods on earnings per share.⁶²⁹
- An entity need not disclose previously unpublished information about claims development that occurred earlier than five years before the end of the annual reporting period in which it first applies IFRS 17 (i.e. information about claims that occurred prior to 1 January 2019 for an entity first applying the standard with an annual reporting period ending 31 December 2023). An entity that elects to take advantage of this disclosure relief should disclose that fact.⁶³⁰

17.2.1.B. Prohibition from applying the risk mitigation prior to the transition date

An entity must not apply the risk mitigation option available for insurance contracts with direct participation features (see 12.3.5 above) before the transition date of IFRS 17. An entity may apply the risk mitigation option prospectively on or after the transition date if, and only if, the entity designates risk mitigation relationships at or before it applies the option.⁶³¹

The Board was aware that some stakeholders would have preferred that the Board amend IFRS 17 to permit retrospective application of the risk mitigation option. In the view of those stakeholders, permitting retrospective application of the option would be the optimal approach to achieve comparability between the information provided about risk mitigation activities that took place before and after the transition date. Acknowledging that view, the Board considered whether it should amend IFRS 17 to permit retrospective application of the risk mitigation option. However, the Board noted that if an entity was permitted to apply the option retrospectively, it could freely decide the extent to which to reflect risk mitigation activities in the contractual service margin based on a known accounting outcome. The entity could do this in a way that would not reflect how the entity would have applied the option in previous periods, without hindsight, had it always applied IFRS 17. Such a risk would affect the credibility of information presented on transition to IFRS 17 and in subsequent periods in which those groups of insurance contracts continue to exist. In the Board's view, these costs would outweigh the benefits of permitting retrospective application of the option. Therefore, the Board reaffirmed its decision to prohibit retrospective application of the option because of the risk of

⁶²⁹ IFRS 17.C3(a).

⁶³⁰ IFRS 17.C28.

⁶³¹ IFRS 17.C3(b).

the use of hindsight.⁶³² Some stakeholders suggested alternative approaches that would avoid the risk of the use of hindsight. However, the Board also rejected these approaches as unworkable.⁶³³

17.2.1.C. Business combinations within the scope of IFRS 3

For contracts acquired in business combinations within the scope of IFRS 3 before the date of initial application of IFRS 17, an entity classifies and groups those contracts based on the contractual terms, economic conditions, operating or accounting policies or other factors as they existed at the date of initial recognition of those contracts rather than at the acquisition date of the business combination.⁶³⁴ This relief allows entities to continue to apply their previous IFRS 4 classification of contracts acquired in a business combination before the date of initial application of IFRS 17.

This relief applies only to business combinations. It does not apply to other transfers of contracts (e.g., portfolio transfers) that are not business combinations.

17.2.2. Disclosures about the effect of transition

At transition to IFRS 17, entities should provide the disclosures required by IAS 8 applicable to changes in accounting policies apart from the exemption discussed above (i.e., there is no requirement to present the amount of the adjustment resulting from applying IFRS 17 affecting each financial line item to either the current period or each prior period presented and the impact of applying IFRS 17 in those periods on earnings per share).

IAS 8 requires the following disclosures upon initial application of an IFRS:⁶³⁵

- ► The title of the IFRS Standard (i.e., IFRS 17)
- A statement that the change in accounting policy is made in accordance with the transitional provisions
- The nature of the change in accounting policy
- Where applicable, a description of the transitional provisions (which means that an entity would need to explain whether and how it had applied the retrospective, modified retrospective and fair value approaches)
- When applicable, the transitional provisions that might have an effect on future periods
- The amount of any adjustment relating to periods prior to the accounting periods presented in the financial statements, to the extent practicable
- If retrospective application is impracticable, the circumstances that led to the existence of that condition and a description of how and from when the change in accounting policy is consistently applied

In addition, as discussed at 16.2 above, entities are required to provide disclosures to enable users of the financial statements to identify the effects of groups of insurance contracts measured at transition date applying the

⁶³² IFRS 17.BC393C.

⁶³³ IFRS 17.BC393D-E.

⁶³⁴ IFRS 3.64N.

⁶³⁵ IAS 8.28.

modified retrospective approach or the fair value approach on the contractual service margin in subsequent periods. This information is provided in the form of reconciliations. In all periods for which disclosures are made for those contracts which used the modified retrospective or fair value approach on transition, an entity should continue to explain how it determined the measurement requirements at transition date.

17.3. Retrospective application of transition

When applying IFRS 17 retrospectively, an entity should:636

- Identify, recognise and measure each group of insurance contracts as if IFRS 17 had always applied
- Identify, recognise and measure any assets for insurance acquisition cash flows as if IFRS 17 had always applied (except that an entity is not required to apply the recoverability assessment test discussed at 8.10 above before the transition date)
- Derecognise any existing balances that would not exist had IFRS 17 always applied
- Recognise any resulting net difference in equity

The balances derecognised upon application of IFRS 17 would include balances recognised previously under IFRS 4, as well as items such as deferred acquisition costs, deferred origination costs (for investment contracts with discretionary participation features) and some intangible assets that relate solely to existing contracts. The requirement to recognise any net difference in equity means that no adjustment is made to the carrying amounts of goodwill from any previous business combination.⁶³⁷ However, the value of contracts within the scope of IFRS 17 that were acquired in prior period business combinations or transfers would have to be adjusted by the acquiring entity from the date of acquisition (i.e., initial recognition of the contracts) together with any intangible related to those in-force contracts (see section 14).

Any intangible asset derecognised would include an intangible asset that represented the difference between the fair value of insurance contracts acquired in a business combination or transfer. It would also include a liability measured in accordance with an insurer's previous accounting practices for insurance contracts where an insurer previously chose the option in IFRS 4 to use an expanded presentation that split the fair value of acquired insurance contracts into two components.⁶³⁸

Applying the standard retrospectively means that the comparative period (i.e., the annual reporting period immediately preceding the date of initial application) must be restated and comparative disclosures made in full in the first year of application subject to the exemptions noted below. An entity may also present adjusted comparative information applying IFRS 17 for any earlier periods (i.e., earlier than the annual reporting period immediately preceding the date of initial application) but is not required to do so. If an entity does present adjusted comparative information for any prior periods, the reference

⁶³⁶ IFRS 17.C4.

⁶³⁷ IFRS 17.BC374.

⁶³⁸ IFRS 4.31.

to 'the beginning of the annual reporting period immediately preceding the date of initial application" (see 19.1 above) must be read as 'the beginning of the earliest adjusted comparative period presented.⁶³⁹ However, an entity is not required to provide the disclosures specified at 16 above for any period presented before the beginning of the annual accounting period immediately preceding the date of initial application.⁶⁴⁰ This relief is intended for entities that are required to present more than one comparative period in their annual financial statements.

If an entity presents unadjusted comparative information and disclosures for any earlier periods, it should clearly identify the information that has not been adjusted, disclose that it has been prepared on a different basis, and explain that basis.⁶⁴¹

The requirement to apply IFRS 17 retrospectively as if it has always applied means that an entity that elects not to change estimates made in previous interim financial statements (see 15.4 above) should estimate the contractual service margin for all individual interim periods previously presented, in order to get to a number for the contractual service margin that reflects that as if IFRS 17 had always been applied.⁶⁴² This is based on the fact that only a fully retrospective interim contractual service margin roll-forward would provide the outcome that corresponds to a situation as if IFRS 17 had always been applied. Retrospective application of the standard by an entity that issues interim financial statements may present significant additional operational challenges for insurers upon transition. This is because the contractual service margin for each interim reporting period subsequent to initial recognition of a group of contracts would need to be tracked and estimated in accordance with the requirements in IFRS 17 to determine the contractual service margin on transition date. Therefore, for entities applying the modified retrospective approach, transitional relief is available from this requirement (see 17.4 below).

The IASB considered that some stakeholders implementing IFRS 17 thought that the inclusion of specified modifications in IFRS 17 implies that an entity cannot make estimates in applying IFRS 17 retrospectively. The Board noted that paragraph 51 of IAS 8, which states that '...the objective of estimates related to prior periods remains the same as estimates related to the current period, namely, for the estimates to reflect the circumstances that existed when the transaction, other event or condition occurred' specifically acknowledges the need for estimates in retrospective application and that this paragraph applies to entities that apply IFRS 17 for the first time, just as it does to entities that apply other IFRS Standards for the first time.⁶⁴³

In addition, some stakeholders suggested that the Board could reduce the burden of applying the transition requirements by specifying methods that can be used, for example, methods using information from embedded value reporting or information prepared for regulatory reporting purposes. However, the Board rejected this suggestion. The Board concluded that specifying methods would conflict with the approach in IFRS 17 of establishing

- 639 IFRS 17.C25.
- ⁶⁴⁰ IFRS 17.C26.
- ⁶⁴¹ IFRS 17.C27.
- 642 IFRS 17.B137.
- 643 IFRS 17.BC380C.

measurement objectives that can be satisfied using different approaches. In particular situations, some methods may be more applicable, or may be easier to implement, and it would not be practicable for an IFRS Standard to specify in detail every situation in which particular methods would be appropriate. The appropriateness of any method depends on the particular facts and circumstances. Furthermore, specifying methods could risk incorrectly implying other methods that would satisfy the requirements of IFRS 17 cannot be used.⁶⁴⁴

How we see it

- IFRS 17 does not include, unlike some other IFRS Standards, a simplification for contracts that have been derecognised before transition date. This is due to the inherent reliance of the model on the contractual service margin at initial recognition of a group of contracts, combined with the long-term nature of many insurance contracts. The consequence is that full retrospective application will be impracticable in more situations because entities will not have sufficient historic information for contracts that were derecognised in the past.
- There is likely to be considerable diversity of practice across entities in calculating the contractual service margin at transition date. This will result in potentially different releases of the contractual service margin (i.e., different profit) for similar types of contracts in subsequent accounting periods. This explains why the Board included a requirement for disclosures that track the effects of the modified retrospective approach and the fair value approach on the contractual service margin and insurance revenue in future periods (see section 16.2).
- Full retrospective application is based on a revision of estimates for all periods after the initial recognition of a group of contracts, requiring the use of historical data. Particularly for long-duration contracts, full retrospective application is likely to be impracticable in many cases, because an entity would have to use hindsight if some of the historical data is lacking.

17.4. Modified retrospective approach

This approach contains a series of permitted modifications to (full) retrospective application, as follows:⁶⁴⁵

- Assessment of insurance contracts or groups of insurance contracts that would have been made at the date of inception or initial recognition (see 17.4.1)
- Amounts related to the contractual service margin or loss component for insurance contracts without direct participation features (see 17.4.2)
- Amounts related to the contractual service margin or loss component for insurance contracts with direct participation features (see 17.4.3)

⁶⁴⁴ IFRS 17.BC380D.

⁶⁴⁵ IFRS 17.C7.

Insurance finance income or expenses (see 17.4.4)

An entity is permitted to use each modification listed above only to the extent that it does not have reasonable and supportable information to apply a full retrospective approach.⁶⁴⁶

The objective of the modified retrospective approach is to achieve the closest outcome to retrospective application possible using reasonable and supportable information available without undue cost or effort. Accordingly, in applying this approach, an entity must:⁶⁴⁷

- Use reasonable and supportable information. If the entity cannot obtain reasonable and supportable information necessary to apply the modified retrospective approach, it should apply the fair value approach
- Maximise the use of information that would have been used to apply a fully retrospective approach, but only use information available without undue cost or effort.

'Undue cost and effort' is not defined in IFRS. However, *IFRS for Small and Medium-sized Entities (IFRS for SMEs*) states that considering whether obtaining or determining the information necessary to comply with a requirement would involve undue cost or effort depends on the entity's specific circumstances and on management's judgement of the costs and benefits from applying that requirement. This judgement requires consideration of how the economic decisions of those that are expected to use the financial statements could be affected by not having that information. Applying a requirement would involve undue cost or effort by a small and medium sized entity (SME) if the incremental cost (for example, valuers' fees) or additional effort (for example, endeavours by employees) substantially exceed the benefits those that are expected to use the SME's financial statements would receive from having the information. The Basis for Conclusions to the *IFRS for SMEs* further observes that:

The undue cost or effort exemption is not intended to be a low hurdle. This is because an entity is required to carefully weigh the expected effects of applying the exemption on the users of the financial statements against the cost or effort of complying with the related requirement. In particular, the IASB observed that it would expect that if an entity already had, or could easily and inexpensively acquire, the information necessary to comply with a requirement, any related undue cost or effort exemption would not be applicable. This is because, in that case, the benefits to the users of the financial statements of having the information would be expected to exceed any further cost or effort by the entity

And

That an entity must make a new assessment of whether a requirement will involve undue cost or effort at each reporting date

The IASB's Conceptual Framework also notes that although cost is a pervasive constraint on the information provided by financial reporting and that the cost of producing information must be justified by the benefits that it provides, the

⁶⁴⁶ IFRS 17.C8.

⁶⁴⁷ IFRS 17.C6.
cost is ultimately borne by the users (not the preparers) and implies that any cost constraint should be seen from a user's viewpoint.

To use each modification, an entity must have the reasonable and supportable information necessary to apply that modification. If not, the entity is required to apply the fair value approach to the group of insurance contracts. The Basis for Conclusions observes that the Board expects that estimates will often be needed when applying a specified modification in the modified retrospective approach.⁶⁴⁸

The Board considered feedback from entities implementing IFRS 17 that said the requirement to use reasonable and supportable information significantly increases the costs of applying the modified retrospective approach. The Board acknowledged that removing the requirements relating to the use of reasonable and supportable information might provide significant cost relief for those entities. However, the Board disagreed with suggestions to amend IFRS 17 in that regard because, in its view, entities should use information that is reasonable and supportable. Permitting an entity to use information that is not reasonable and supportable would undermine the credibility of the information that results from applying IFRS 17. In addition, permitting an entity to ignore reasonable and supportable information available without undue cost or effort that the entity would have used to apply a retrospective approach would be contrary to the objective of the modified retrospective approach and would reduce comparability between contracts issued before and after the transition date.⁶⁴⁹

17.4.1. Assessments at inception or initial recognition

When it is impracticable for an entity to apply the retrospective approach to a group of contracts at initial recognition, it should determine the following by using information available at the transition date:⁶⁵⁰

- How to identify groups of contracts (see section 6)
- Whether an insurance contract meets the definition of an insurance contract with direct participation features (see section 12.3.1X)
- how to identify discretionary cash flows for insurance contracts without direct participation features (see section 12.2X)
- Whether an investment contract meets the definition of an investment contract with discretionary participation features (see 12.4 above)

To apply IFRS 17 retrospectively, an entity needs to determine the group of insurance contracts to which individual contracts would have belonged on initial recognition. IFRS 17 requires entities to group only contracts written within one year.⁶⁵¹ The IASB considered that it may not always be practicable for entities to group contracts written in the same one year period retrospectively.⁶⁵² Consequently, in aggregating contracts when it is impracticable to apply a

⁶⁴⁸ IFRS 17.BC380A, C.

⁶⁴⁹ IFRS 17.BC380B.

⁶⁵⁰ IFRS 17.C9.

⁶⁵¹ IFRS 17.BC391.

⁶⁵² IFRS 17.BC392.

retrospective approach, an entity is permitted (to the extent that reasonable and supportable information does not exist) to aggregate contracts in a portfolio issued more than one year apart into a single group.⁶⁵³ This may mean that a single group of, say, term life contracts, could span many years to the extent that reasonable and supportable information would not be available to aggregate the contracts into groups that only contain contracts issued within one year.

To the extent there is no reasonable and supportable information, as discussed above, an entity should classify as a liability for incurred claims, a liability for settlement of claims incurred before an insurance contract was acquired in a transfer of business contracts that do not form a business or in a business combination within the scope of IFRS 3 (see 14.2 above).⁶⁵⁴ This relief was added in June 2020 in response to feedback that suggested that it would often be impracticable for an entity to apply IFRS 17 retrospectively to contracts acquired before the transition date (that is, to classify and measure those contracts as a liability for remaining coverage).⁶⁵⁵

17.4.2. Determining the contractual service margin or loss component for groups of insurance contracts without direct participation features

When it is impracticable for an entity to apply the full retrospective approach at initial recognition to determine the contractual service margin or the loss component of the liability for remaining coverage, it is permitted to determine these at transition date using a modified approach to determine the components of the liability for remaining coverage.⁶⁵⁶

The modified retrospective approach requires that reasonable and supportable information exists for the cash flows prior to transition up until the date of initial recognition (i.e., the date past which reasonable and supportable information is no longer available). This means all of the cash flows within the boundary of the insurance contract, as discussed at 9.1 above, including, for example, internally allocated directly attributable insurance acquisition cash flows, claims handling costs, policy maintenance and administration costs and an allocation of fixed and variable overheads.

The modified retrospective approach allows considerable judgement as it permits an entity to go back as far as it is able in order to determine reliable accounting estimates for the fulfilment cash flows. Inevitably, this will result in diversity in practice by first time adopters and some lack of comparability in the release of the contractual margin in future periods between entities with longer-term contracts.

The process applied is as follows:

The future cash flows at the date of initial recognition of a group of insurance contracts must be estimated as the amount of the future cash flows at the transition date (or earlier, if the future cash flows at the earlier date can be determined retrospectively), adjusted by the cash flows that

⁶⁵³ IFRS 17.C10.

⁶⁵⁴ IFRS 17.C9A.

⁶⁵⁵ IFRS 17.BC382A.

⁶⁵⁶ IFRS 17.C11.

have occurred between the date of initial recognition of a group of insurance contracts and the transition date (or earlier date). The cash flows known to have occurred include those resulting from contracts that were derecognised before the transition date.⁶⁵⁷

- The discount rates that applied at the date of initial recognition of a group of insurance contracts (or subsequently) should be determined:⁶⁵⁸
- Using an observable yield curve that, for at least three years immediately before the transition date, approximates the yield curve estimated applying a basis comparable with the general approach to calculating discount rates (see section 9.3), if such an observable yield curve exists
- Or
- If the observable yield curve described above does not exist, the discount rates that applied at the date of initial recognition, or subsequently, should be estimated by determining an average spread between an observable yield curve and the yield curve estimated applying the general approach, and applying that spread to that observable yield curve. That spread should be an average over at least three years immediately before the transition date.
- The risk adjustment for non-financial risk at the date of initial recognition of a group of insurance contracts, or subsequently, should be determined by adjusting the risk adjustment for non-financial risk at the transition date by the expected release of risk before the transition date. The expected release of risk should be determined by reference to the release of risk for similar insurance contracts that the entity issues at the transition date.⁶⁵⁹

An entity should use the same systematic and rational method that it expects to use after transition date to allocate any insurance acquisition cash flows paid (or for which a liability has been recognised applying another IFRS Standard) before the transition date (excluding any amount relating to insurance contracts that ceased to exist before the transition date) to:⁶⁶⁰

- Groups of insurance contracts recognised at the transition date
- Groups of insurance contracts that are expected to be recognised after the transition date

Insurance acquisition cash flows paid before the transition date that are allocated to a group of insurance contracts that is recognised at the transition date adjust the contractual service margin of that group, to the extent insurance contracts expected to be in the group have been recognised at that date. Other insurance acquisition cash flows paid before the transition date, including those that are allocated to a group of insurance contracts that is expected to be recognised after the transition date, are also recognised as an asset (see 7.3 above).⁶⁶¹

This systematic and rational method mentioned above should be the same systematic and rational method as the entity expects to apply after the

⁶⁵⁷ IFRS 17.C12.

⁶⁵⁸ IFRS 17.C13.

⁶⁵⁹ IFRS 17.C14.

⁶⁶⁰ IFRS 17.C14B.

⁶⁶¹ IFRS 17.C14C.

transition date (see 7.3 above). To the extent that the entity does not have reasonable and supportable information to use a systematic and rational method, the following amounts should be determined to be nil at the transition date:⁶⁶²

- The adjustment to the contractual service margin of groups of insurance contracts that are recognised at the transition date and any asset for insurance acquisition costs relating to that group
- The asset for insurance acquisition cash flows for groups of insurance contracts that are expected to be recognised after the transition date

An entity that makes an accounting policy choice not to change the treatment of accounting estimates made in previous interim financial statements (see 15.4 above) should determine the contractual service margin or loss component at the transition date as if it has not prepared interim financial statements before the transition date, if there is not reasonable and supportable information to apply a retrospective approach.⁶⁶³ This means that entities without reasonable and supportable retrospective information do not have to recalculate insurance contract liabilities prior to transition date on a more frequent basis than annual.

If applying the modified requirements above results in a contractual service margin at initial recognition, then the entity should determine the contractual service margin at transition date, as follows:⁶⁶⁴

- Use the modified discount rates calculated above to accrete interest on the contractual service margin
- Determine the amount of the contractual service margin recognised in profit or loss because of the transfer of services before the transition date, by comparing the remaining coverage units at that date with the coverage units provided under the group of contracts before the transition date (see 9.7 above)

If applying the modified requirements above results in a loss component of that liability for remaining coverage at the date of initial recognition, an entity should determine any amounts allocated to that loss component before the transition date applying the modified requirements above and using a systematic basis of allocation.⁶⁶⁵

For a group of reinsurance contracts held that provides coverage for an onerous group of insurance contracts and was acquired before or at the same time that the insurance contracts were issued, an entity should establish a loss-recovery component of the asset for remaining coverage at the transition date (see 11.4.3 above). To the extent that there is not reasonable and supportable information to apply a retrospective approach, the entity must determine the loss-recovery component by multiplying:⁶⁶⁶

The loss component of the liability for remaining coverage for the underlying insurance contracts at the transition date

⁶⁶² IFRS 17.C14D.

⁶⁶³ IFRS 17.C14A.

⁶⁶⁴ IFRS 17.C15.

⁶⁶⁵ IFRS 17.C16.

⁶⁶⁶ IFRS 17.C16A.

The percentage of claims for the group of underlying insurance contracts the entity expects to recover from the group of reinsurance contracts held

However, if an entity does not have reasonable and supportable information to determine the loss recovery, it is not permitted to identify a loss-recovery component for the group of reinsurance contracts held.⁶⁶⁷

At the transition date onerous underlying insurance contracts might include in an onerous group of insurance contracts both onerous insurance contracts covered by the group of reinsurance contracts held and onerous insurance contracts not covered by a group of reinsurance contracts held. In that case, for the purpose of determining the loss-recovery component, the entity should use a systematic and rational basis of allocation to determine the portion of the loss component of the group of insurance contracts that relates to insurance contracts covered by the group of reinsurance contracts held.⁶⁶⁸

The following example illustrates the measurement of contracts without direct participation features at the transition date using the modified retrospective approach:

Illustration 86 – Measurement of groups of insurance contracts without direct participation features applying the modified retrospective approach [Based on example 17 in the Illustrative Examples to IFRS 17.IE186-191]

An entity issues insurance contracts without direct participation features and aggregates those contracts into groups. The entity estimates the fulfilment cash flows at the transition date applying the general model as the sum of:

- An estimate of the present value of future cash flows of CU620 (including the effect of discounting of CU(150)); and
- A risk adjustment for non-financial risk of CU100.

The entity concludes that it is impracticable to apply IFRS 17 retrospectively. As a result, the entity chooses to apply the modified retrospective approach to measure the contractual service margin at the transition date. The entity uses reasonable and supportable information to achieve the closest outcome to retrospective application.

Analysis

The entity determines the contractual service margin at the transition date by estimating the fulfilment cash flows on initial recognition, as follows:

Future cash flows at the date of initial recognition of the group of insurance contracts are estimated to be the sum of future cash flows of CU770 at the transition date and cash flows of CU800 that are known to have occurred between the date of initial recognition of the group of insurance contracts and transition date. This includes premiums paid on initial recognition of CU1,000 and cash outflows of CU200 paid during the period. This amount includes cash flows resulting from contracts that ceased to exist before the transition date.

⁶⁶⁷ IFRS 17.C16C.

⁶⁶⁸ IFRS 17.C16B.

Illustration 86 – Measurement of groups of insurance contracts without direct participation features applying the modified retrospective approach [Based on example 17 in the Illustrative Examples to IFRS 17.IE186-191] (cont'd)

- The entity determines the effect of discounting at the date of initial recognition of the group of insurance contracts to equal CU(200), calculated as the discounting effect on estimates of future cash flows at the date of initial recognition determined above. The entity determines the effect of discounting by using a yield curve that, for at least three years immediately before the transition date, approximates the yield curve estimated applying the methodology described (see 8.2). The entity estimates this amount to equal CU50, reflecting that the premium received on initial recognition; thus, the discounting effect relates only to future cash outflows.
- The entity determines the risk adjustment for non-financial risk on initial recognition of CU120, as the risk adjustment for the non-financial risk at the transition date of CU100 adjusted by CU20 to reflect the expected release of risk before the transition date. The entity determines the expected release of risk by reference to the release of risk for similar insurance contracts that the entity issues at the transition date.
- The contractual service margin on initial recognition is CU110, the amount that would result in no profit or loss on initial recognition of the fulfilment cash flows of CU110. The subsequent movement in the contractual service margin uses the discount rates derived above to accrete interest and recognises the amount in profit or loss because of the transfer of services. Comparing the remaining coverage units at the transition date with the coverage units provided by the group before the transition date results in CU90. Consequently, the contractual service margin on the transition date is CU20.

This is illustrated, as follows:

	Transition date	Adjustment to initial recognition	Initial recognition
	CU	CU	CU
Estimates of future cash flows	770	(800)	(30)
Effect of discounting	(150)	(50)	(200)
Risk adjustment for non- financial risk	100	20	120
Fulfilment cash flows	720	(830)	(110)
Contractual service margin	20	90	110
Liability for remaining coverage	740		-

- The modified retrospective approach allows considerable judgement, as it permits an entity to use historical data to determine reliable accounting estimates for the fulfilment cash flows. Inevitably, this will result in diversity in practice that reduces the comparability in the release of the contractual service margin in future periods between entities with longerterm contracts.
- IFRS 17 paragraph BC380C articulates the IASB's intent that an entity is allowed to make estimates when applying a specified modification in the modified retrospective approach. This clarification of intent will greatly assist entities in applying the modified retrospective approach.

17.4.3. Determining the contractual service margin or loss component for groups of insurance contracts with direct participation features

When it is impracticable for an entity to apply the full retrospective approach, at initial recognition, to determine the contractual service margin or the loss component of the liability for remaining coverage for groups of contracts with direct participation features, these should be determined, as:⁶⁶⁹

- The total fair value of the underlying items at the transition date (A in the table below); minus
- The fulfilment cash flows at the transition date (B); plus or minus
- An adjustment for (C):
 - Amounts charged by the entity to policyholders (including amounts deducted from the underlying items) before that date
 - Amounts paid before that date that would not have varied based on the underlying items
 - The change in the risk adjustment for non-financial risk caused by the release from risk before that date. An entity should estimate this amount by reference to the release of risk for similar insurance contracts that the entity issues at the transition date
 - Insurance acquisition cash flows paid (for which a liability has been recognised under another IFRS Standard) before the transition date that are allocated to the group
- If the sum of (A) (C) above results in a contractual service margin minus the amount of the contractual service margin that relates to services provided before that date. The sum of (A)-(C) is a proxy for the total contractual service margin for all services to be provided under the group of contracts, i.e., before any amounts that would have been recognised in profit or loss for services provided. An entity should estimate the amounts that would have been recognised in profit or loss for services provided by comparing the remaining coverage units at the transition date with the

⁶⁶⁹ IFRS 17.C17.

coverage units provided under the group of contracts before the transition date

Or

If the sum of (A) - (C) results in a loss component, adjust the loss component to nil and increase the liability for remaining coverage excluding the loss component by the same amount.

The following example illustrates how to apply the modified retrospective approach to contracts with direct participation features at the transition.

Illustration 87 – Measurement of groups of insurance contracts with direct participation features applying the modified retrospective approach [Based on example 18 in the Illustrative Examples to IFRS 17, IE192-199]

An entity issues 100 insurance contracts with direct participation features five years before the transition date and aggregates these contracts into a group. Under the terms of the contracts:

- A single premium is paid at the beginning of the coverage period of 10 years.
- The entity maintains account balances for policyholders and deducts charges from those account balances at the end of each year.
- A policyholder will receive an amount equal to the higher of the account balance and the minimum death benefit, if an insured person dies during the coverage period.
- If an insured person survives the coverage period, the policyholder receives the value of the account balance.

The following events occurred in the five-year period prior to the transition date:

- The entity paid death benefits and other expenses of CU239 comprising:
- CU216 of cash flows that vary based on returns from underlying items; and
- CU23 of cash flows that do not vary based on the returns from underlying items; and
- The entity deducted charges from the underlying items of CU55.

The entity estimates the fulfilment cash flows at the transition date to be CU922, comprising the estimates of the present value of the future cash flows of CU910 and a risk adjustment for non-financial risk of CU12. The fair value of the underlying items at that date is CU948.

The entity makes the following estimates:

Based on an analysis of similar contracts that the entity issues at transition date, the estimated change in the risk adjustment for nonfinancial risk caused by the release from risk in the five-year period before transition date is CU14; and Illustration 87 – Measurement of groups of insurance contracts with direct participation features applying the modified retrospective approach [Based on example 18 in the Illustrative Examples to IFRS 17, IE192-199] (cont'd)

The units of coverage provided before the transition date is approximately 60% of the total coverage units of the group of contracts.

Analysis

The entity applies a modified retrospective approach to determine the contractual service margin at transition date. It determines that the contractual service margin for services provided before the transition date of CU26 is the percentage of the coverage units provided before the transition date, and the total coverage units of 60% multiplied by the contractual service margin before recognition in profit or loss of is CU44. This is illustrated, as follows:

	CU
Fair value of the underlying items at transition date	948
Fulfilment cash flows at the transition date	(922)
Adjustments:	
Charges deducted from underlying items before the transition date	55
Amounts paid before transition date that would not have varied based on the returns on underlying items	(23)
Estimated change in the risk adjustment for non-financial risk caused by the release from risk before transition date	(14)
Contractual service margin of the group of contracts before recognition in profit or loss	44
Estimated amount of the contractual service margin that relates to services provided before the transition date	(26)
Estimated contractual service margin at the transition date	18
The total insurance contract liability at the transition date is CU940, which is the sum of the fulfilment cash flows of CU922 and the contractual service margin of CU18.	

In addition, an entity should apply the same methodology described at 17.4.2 above to recognise an asset for insurance acquisition cash flows, and any adjustment to the contractual service margin of a group of insurance contracts with direct participation features for insurance acquisition cash flows.⁶⁷⁰

⁶⁷⁰ IFRS 17.C17A.

- For the variable fee approach, even though the modified retrospective approach focuses on the contractual service margin for the open contracts at transition, historical information and estimates of certain effects, for example fees charged to policyholders or death benefits paid before the transition date, are still required for all contracts, including derecognised contracts, in order to estimate the contractual service margin at transition.
- Another important feature of the variable fee approach is that no loss component will exist at transition when the modified retrospective approach is applied. As a result, the possibility of an entity being able to establish a contractual service margin in case of favourable changes in circumstances after transition increases.

17.4.4. Insurance finance income or expenses

The modified requirements for insurance finance income or expenses differ depending on whether, as a result of applying the modified retrospective approach, groups of insurance contracts include those issued more than one year apart (see 17.4.1 above).

17.4.4.A. Groups of insurance contracts that include contracts issued more than one year apart

When an entity has aggregated a group of insurance contracts on a basis that includes contracts issued more than one year apart in the same group.⁶⁷¹

- The entity is permitted to determine the discount rates at the date of initial recognition for the contractual service margin, the liability for remaining coverage and for incurred claims for contracts applying the premium allocation approach, as at the transition date instead of at the date of initial recognition or incurred claim date
- If an entity chooses to disaggregate insurance finance income or expenses between amounts included in profit or loss and amounts included in other comprehensive income (see 15.3.1 to 15.3.4 above), the entity needs to determine the cumulative amount of insurance finance income or expenses recognised in other comprehensive income at the transition date in order to be able to reclassify any remaining amounts from other comprehensive income to profit or loss upon subsequent transfer or derecognition. The entity is permitted to determine the cumulative difference on transition either by:
 - Applying the requirements for groups of contracts that do not include contracts issued more than one year apart - see 17.4.4.B below
 Or
 - As nil; except for

Insurance contracts with direct participation features where the entity holds the underlying items when the cumulative difference is equal to

⁶⁷¹ IFRS 17.C18.

the cumulative amount recognised in other comprehensive income on the underlying items.

The table below provides a summary of the requirements:

	Groups at transition date		
	Include contracts issued more than one year apart	Do not include contracts issued more than one year apart	
1. Discount rates to determine insurance finance income or expenses subsequent to transition	Permitted to determine the discount rate at initial recognition and, for incurred claims, at the transition date instead of at the date of initial recognition or incurred claims	If an entity is applying the permitted modification in determining the discount rate at initial recognition (or subsequently), it must determine other discount rates in the same way	
2. Cumulative other comprehensive income at transition date for:	Equal to the cumulative amount recognised in other comprehensive income on the underlying items		
A) Groups of direct participating contracts for which entity holds underlying items			
B) Groups of other contracts for which changes in financial assumptions have a substantial effect on the amounts paid to policyholders	Set to nil	Set to nil	
C) Other groups of contracts subject to general model	Set to nil; or apply fully retrospective or modified retrospective approach to estimating discount rates at initial recognition	Determine cumulative difference by applying fully retrospective or modified retrospective approach to estimating discount rates at initial recognition	
D) Groups of contracts subject to PAA – entity disaggregates interest expense on incurred claims	Set to nil, or apply retrospective approach.	Determine cumulative difference by applying fully retrospective or modified retrospective approach to estimating discount rates when claims incurred	

When an entity applies the modified retrospective approach under IFRS 17, a modification relevant for disaggregating insurance finance income or expenses at transition between amounts included in profit or loss and amounts included in other comprehensive income exists. For groups of insurance contracts with direct participation for which the entity holds the underlying items (i.e., applies the current period book yield approach), this modification would allow the entity to determine the cumulative amount of insurance finance income or expenses recognised in OCI at the transition date equal to the cumulative amount recognised in OCI on the underlying items at that date. In certain circumstances, the interaction of this provision with the initial application of IFRS 9 could result in mismatches between amounts accumulated in OCI for the underlying items and the amounts accumulated in OCI for insurance contracts on the date of initial application. This is because the modification is applied at the date of transition to IFRS 17 (1 January 2022) whereas the date of initial application of IFRS 9 is 1 January 2023. To the extent the amount recognised in OCI under the modification exceeds the amount recognised in OCI for the underlying items at the date of initial application, an entity could elect to transfer amounts recognised in OCI for the insurance liabilities to another part of equity. This is because this mismatch would reflect amounts that would not be reclassified to profit or loss in a future period and IFRS 17 or another IFRS Standard would not prohibit transferring such an amount from OCI to other parts of equity. Entities would have to consider any specific capital requirements that apply under local law and regulations.

17.4.4.B. Groups of insurance contracts that do not include contracts issued more than one year apart

When an entity has aggregated a group of insurance contracts on a basis that does not include contracts issued more than one year apart in the same group:⁶⁷²

- If an entity applies the requirements at 17.4.2 above for groups of insurance contracts without direct participation features to estimate the discount rates that applied at initial recognition (or subsequently), it should also determine the discount rates specified for accreting the interest on the contractual service margin, measuring the changes in the contractual service margin, discounting the liability for remaining coverage under the premium allocation approach and for disaggregated insurance finance income or expenses in the same way
- If an entity chooses to disaggregate insurance finance income or expenses between amounts included in profit or loss and amounts included in other comprehensive income (see 15.3.1 to 15.3.4 above), the entity needs to determine the cumulative amount of insurance finance income or expenses recognised in other comprehensive income at the transition date in order to be able to reclassify any remaining amounts from other comprehensive

⁶⁷² IFRS 17.C19.

income to profit or loss upon subsequent transfer or derecognition in future periods. The entity should determine the cumulative difference:

- For insurance contracts for which changes in assumptions that relate to financial risk do not have a substantial effect on the amounts paid to policyholders - if it applies the requirements at 17.4.2 above to estimate the discount rates at initial recognition - using the discount rates that applied at the date of initial recognition, also applying the requirements at 17.4.2 above
- For groups of insurance contracts for which changes in assumptions that relate to financial risk have a substantial effect on the amounts paid to policyholders, on the basis that the assumptions that relate to financial risk that applied at the date of initial recognition are those that apply on the transition date, i.e., as nil
- For insurance contracts for which an entity will apply the premium allocation approach to discount the liability for incurred claims - if the entity applies the requirements at 17.4.2 above to estimate the discount rates at initial recognition (or subsequently) - using the discount rates that applied at the date of the incurred claim, also applying the requirements at 17.4.2 above
- For insurance contracts with direct participation features where the entity holds the underlying items - as equal to the cumulative amount recognised in other comprehensive income on the underlying items

Although entities are permitted to set the cumulative balance in other comprehensive income for disaggregated insurance finance income or expenses at nil on transition in certain circumstances, the same option is not permitted under IFRS 9 for any related financial assets. Therefore, an accounting mismatch will arise. It is observed in the Basis for Conclusions that the Board considered feedback from some stakeholders that preferred alternative modifications to those modifications set out above for determining the amount of insurance finance income or expenses accumulated in other comprehensive income at the transition date in order to resolve the accounting mismatch. The Board disagreed with these suggestions on various grounds and declined to amend either IFRS 9 or IFRS 17.⁶⁷³

In addition, to the extent that an entity has made an accounting policy choice not to change the treatment of accounting estimates made in previous interim financial statements and is unable to apply this treatment retrospectively (see 17.4.1 above) it should determine amounts related to insurance finance income or expenses at the transition date as if it had not prepared interim financial statements before the transition date.

How we see it

The possibility and, in some cases, the requirement, to set OCI related to insurance liabilities on transition to nil, sometimes referred to as the "fresh start" approach may be viewed as an important aspect to managing the transition effects of IFRS 17. In particular, this will be the case in jurisdictions where interest rates guaranteed in the past are

⁶⁷³ IFRS 17.BC384A-B.

relatively high compared with the existing low interest rate environment that may still apply at transition. This approach would immediately affect shareholder's equity at transition, but more favourably impact profit or loss in the years after transition due to a lower interest accretion on the insurance liabilities. If setting OCI balances to nil, entities should carefully consider what locked-in rate will be used for disaggregating insurance finance income or expenses after transition. Under the modified retrospective approach, the standard allows entities to set the locked-in rate at the transition date rather than at the inception date. Using the rate at transition would, in our view, best align with an OCI balance of nil as the rate at the transition date would be consistent with a transition OCI balance of nil under the IFRS 17 model.

For contracts with direct participation features applying the current period book-yield approach, the simplification to set the OCI balance for the insurance liabilities at the amount of the underlying items at transition seems logical. Where the interaction of this provision with the initial application of IFRS 9 results in mismatches between amounts accumulated in OCI for the underlying items and the amounts accumulated in OCI for insurance contracts on the date of initial application, an entity could elect to transfer amounts recognised in OCI for the insurance liabilities to another part of equity (see our comment under section 17.4.4.A above).

17.5. Fair value approach

The fair value approach is:

Permitted as an alternative to the modified retrospective approach for a group of contracts when full retrospective application of that group of contracts is impracticable (see 17.2 above)

Or

Required when full retrospective application of a group of contracts is impracticable and an entity cannot obtain reasonable and supportable information for that group of contracts to use the modified retrospective approach (see 17.3 above)

Or

Permitted for a group of insurance contracts with direct participation features when risk mitigation has been applied prospectively to the group from the transition date and the entity has used derivatives, reinsurance contracts held or non-derivative financial instruments at fair value through profit or loss to mitigate financial risk arising from that group of contracts before transition date. (see 12.3.5 above)

To apply the fair value approach, an entity should determine the contractual service margin or loss component of the liability for remaining coverage at the transition date as the difference between the fair value of a group of insurance contracts and the fulfilment cash flows measured at that date. In determining fair value, an entity must apply the requirements of IFRS 13. This excludes the requirement that the fair value of a financial liability with a demand feature (e.g., a demand deposit floor) cannot be less than the amount payable on

demand, discounted from the first date that the amount could be required to be paid.⁶⁷⁴ This means that insurance contract liabilities can be measured at an amount lower than the discounted amount repayable on demand.

For a group of reinsurance contracts held to which the underlying insurance contracts are onerous at the transition date, an entity should determine the loss-recovery component of the asset for remaining coverage by multiplying:⁶⁷⁵

- The loss component for the liability for remaining coverage for the underlying insurance contracts at the transition date
- The percentage of claims for the group of underlying insurance contracts the entity expects to recover from the group of reinsurance contracts held

At the transition date, onerous underlying insurance contracts might be included in a group of insurance contracts with other onerous insurance contracts that are not covered by the group of reinsurance contracts held. In that case, for the purpose of applying the calculation above, an entity should use a systematic and rational basis of allocation to determine the portion of the loss component of the group of reinsurance contracts that relates to insurance contracts covered by the group of reinsurance contracts held.⁶⁷⁶

In applying the fair value approach, an entity may use reasonable and supportable information for what the entity would have determined, given the terms of the contract and market conditions at the date of inception or initial recognition, as appropriate or, alternatively, reasonable and supportable information at the transition date in determining:⁶⁷⁷

- How to identify groups of insurance contracts
- Whether an insurance contract meets the definition of an insurance contract with direct participation features
- How to identify discretionary cash flows for insurance contracts without direct participation features
- Whether an investment contract meets the definition of an investment contract with discretionary participation features (see 12.4 above)

In addition, the general requirements of IFRS 17 are modified when the fair value approach is used: $^{\rm 678}$

- An entity may choose to classify as a liability for incurred claims, a liability for settlement of claims incurred before an insurance contract was acquired in a transfer of insurance contracts that do not form a business or in a business combination within the scope of IFRS 3.⁶⁷⁹
- When determining groups of insurance contracts, an entity may include those issued more than one year apart. An entity is only allowed to divide groups into those that include contracts issued within a year or less if it has reasonable and supportable information to make the decision. This reflects the Board's expectation that grouping of contracts issued within a year (or

⁶⁷⁴ IFRS 17.C20.

⁶⁷⁵ IFRS 17.C20A.

⁶⁷⁶ IFRS 17.C20B.

⁶⁷⁷ IFRS 17.C21-C22.

⁶⁷⁸ IFRS 17.C23.

⁶⁷⁹ IFRS 17.C22A.

less) will be challenging in situations where the fair value approach is applied. $^{\rm 680}$

An entity determines the discount rate at the date of initial recognition of a group of contracts and discount rates of the date of incurred claims under the premium allocation approach (when discounting has been elected - see 10.5 above) at the transition date instead of the date of the initial recognition or incurred claim.⁶⁸¹

Frequently asked questions

Question 17-1: In applying the fair value approach to transition, should the fair value reflect the non-performance risk of the entity? [TRG meeting April 2019 – Agenda paper no. 02, Log S127]

The IASB staff confirmed that when, applying the fair value approach, an entity determines the contractual service margin by comparing the fulfilment cash flows and the fair value of a group of insurance contracts. The fair value measurement in this situation reflects the effect of nonperformance risk as required by IFRS 13 (but not the requirements relating to demand features). However, the fulfilment cash flows of an entity do not

reflect the non-performance risk of the entity and this applies also to the fulfilment cash flows of an entity using the fair value approach on transition (i.e., the fulfilment cash flows of an entity that applies the fair value approach on transition exclude non-performance risk, but non-performance risk is considered when determining the fair value of a group of contracts at transition date for the purpose of the calculation of the contractual service margin as the difference between the fulfilment cash flows and fair value).

Illustration 88– The fair value framework

The objective of a fair value measurement is to estimate 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.⁶⁸²

This diagram below illustrates the interdependence of the various components of the fair value measurement principles in IFRS 13. All of these interdependent components need to be considered. A decision on one will impact another and, thus, conclusions will require refinement as each component is considered.

⁶⁸⁰ IFRS 17.C23.
⁶⁸¹ IFRS 17.C23.
⁶⁸² IFRS 13.B2.



The unit of account determines the level at which an asset or liability is aggregated or disaggregated for financial reporting purposes. IFRS 17 determines the unit of account to determine the fair value of a group of insurance contracts for both business combinations (see section 14 above) and transition purposes.

The reference market determines the possible source of market data (whether observable or estimated using a valuation technique) that can be used within the fair value calculation as well as the characteristics of a hypothetical market participant. If there is a principal market for the asset or liability being measured, fair value should be determined using the price in that market, even if a price in a different market is more advantageous at the measurement date. Only in situations where there is no principal market for the asset or liability being measured, can an entity consider the most advantageous market. The most advantageous market is the one that maximises the amount that would be received to sell the asset or minimises the amount that would be paid to transfer the liability. The entity must have access to the market at the measurement date.

- Market participants are other entities with whom the entity would enter into a transaction in the reference market. Buyers and sellers in the principal (or most advantageous) market for the asset or liability that have all of the following characteristics:⁶⁸³
 - Independent of each other
 - Knowledgeable, having a reasonable understanding about the asset or liability
 - Willing to enter into a transaction for the asset or liability
 - Able to enter into a transaction
- Three widely used valuation techniques are the market approach, the cost approach and the income approach. An entity must use valuation techniques consistent with one or more of those approaches to measure fair value.⁶⁸⁴

Some of the key differences between the measurement model under IFRS 17 fulfilment cash flows and the fair value measurement approach under IFRS 13 are:

⁶⁸³ IFRS 13.BC55-BC59.

⁶⁸⁴ IFRS 13.62.

Illustration 88– The fair value framework (cont'd)			
	IFRS 17 fulfilment cash flows	IFRS 13 fair value	
Overall objective	Fulfilment of insurance contract, but considering consistency with market information where necessary	View of a (hypothetical) market participant	
Entity's own risk of non-performance	Excludes own risk of non-performance	Includes own risk of non-performance	
Adjustment for risk	Reflecting the entity's perception of non- financial risk	Reflecting a market participant's perception of risk	
Service margin	N/A	Service margin required by a market participant	

- Determining fair value will pose many challenges and require significant judgement. An important area is the level of aggregation and its impact on diversification. The fair value of a single group of insurance contracts may not take into account any benefits of diversification which would likely be considered by entities when determining the fulfilment cash flows.
- IFRS 13 includes a requirement on demand deposits, which means that the fair value of a financial liability with a demand feature can never be less than present value of the amount payable on demand. This requirement does not have to be applied when calculating the fair value of insurance contracts at transition. However, all other IFRS 13 requirements must be applied in determining fair value, including the requirement to consider the entity's own non-performance risk.

17.5.1. Disaggregated insurance finance income or expenses using the fair value approach

If an entity chooses to disaggregate insurance finance income or expenses between profit or loss and other comprehensive income, it is permitted to determine the cumulative amount of insurance finance income or expenses recognised in other comprehensive income at the transition date:⁶⁸⁵

 Retrospectively, but only if it has reasonable and supportable information to do so

Or

- As nil, unless the below applies
- ► For insurance contracts with direct participation features where the entity holds the underlying items, as equal to the cumulative amount recognised in other comprehensive income from the underlying items.

How we see it

Although the above-mentioned option allows for other comprehensive income to be set at nil on transition, no equivalent option exists under transition to IFRS 9 for financial assets held at fair value through other comprehensive income. Entities should, therefore, carefully evaluate the combined transition impact of IFRS 17 and IFRS 9 and determine a transition approach that results in a useful depiction of this relationship in the years after transition.

⁶⁸⁵ IFRS 17.C24.

17.5.2. Asset for insurance acquisition cash flows using the fair value approach

The amount of any asset for insurance acquisition cash flows should not be included in the measurement of any groups of insurance contracts recognised at the transition date. 686

In applying the fair value approach for an asset for insurance acquisition cash flows, an entity should determine an asset for insurance acquisition cash flows at the transition date at an amount equal to the amount of insurance acquisition cash flows the entity would incur at the transition date for the rights to obtain:⁶⁸⁷

- Recoveries of insurance acquisition cash flows from premiums of insurance contracts issued before the transition date but not yet recognised at the transition date (a)
- Future insurance contracts that are renewals of insurance contracts recognised at the date of transition and insurance contracts described in (a) above, (b)
- Future insurance contracts, other than those in (b) above, after the date of transition without paying again insurance acquisition cash flows the entity has already paid that are directly attributable to the related portfolio of insurance contracts:

Frequently asked questions

Question 17-2: When the fair value approach to transition is applied are insurance acquisition cash flows that occurred prior to the transition date recognised as revenue and expenses in the statement of financial performance applying paragraphs B121(b) and B125 of IFRS 17 for reporting periods subsequent to the transition date? [TRG meeting February 2018 – Agenda paper no. 06, Log S05]

The TRG members noted that:

Applying the fair value transition approach means that the amount of insurance acquisition cash flows included in the measurement of the contractual service margin will be only amounts occurring after the transition date that are also included in the fulfilment cash flows. When this approach to transition is applied, an entity is not permitted to

include in the measurement of the contractual service margin any insurance acquisition cash flows occurring prior to the date of transition

- The fair value approach is intended to provide an entity with a 'fresh start' approach to transition
- Since insurance acquisition cash flows that occurred prior to the transition date are not included in the measurement of the contractual service margin at the transition date, they are not included in the presentation of insurance revenue and expenses for reporting periods subsequent to the transition date.

The IASB staff noted that this analysis applies in all situations that the fair value transition approach is taken, irrespective of whether the entity can identify and measure the insurance acquisition cash flows that applied prior to the transition date.

⁶⁸⁶ IFRS 17.C24B.

⁶⁸⁷ IFRS 17.C24A.

Even though the fair value transition approach of IFRS 17 was amended in June 2020 to allow for the recognition of an asset for insurance acquisition cash flows for contracts to be recognised after the transition date (see section 7.3 above), no insurance acquisition cash flows should be included in the measurement of any groups of insurance contracts already recognised at the transition date.

17.6. Redesignation of financial assets and financial liabilities - when IFRS 9 has been applied previously

IFRS 17 allows a generous degree of dispensation for entities to redesignate their financial assets within the scope of IFRS 9 when IFRS 17 is applied. In addition, a consequential change to IFRS 9 allows redesignation of financial liabilities in certain circumstances.

17.6.1. Redesignation of financial assets

At the date of initial application of IFRS 17, an entity that had applied IFRS 9 to annual reporting periods before the initial application of IFRS 17: 688

- May reassess whether an eligible financial asset meets the condition to be held within a business model whose objective is to hold financial assets in order to collect contractual cash flows, or is held within a business model whose objective is achieved by both collecting contractual cash flows and selling financial assets. A financial asset is eligible only if the financial asset is held for an activity that is connected with contracts within the scope of IFRS 17. Examples of financial assets that would not be eligible for reassessment are financial assets held for banking activities or financial assets held for investment contracts that are outside the scope of IFRS 17
- Should revoke its designation of a financial asset measured at fair value through profit or loss if the original designation was made to avoid or reduce an accounting mismatch and that accounting mismatch no longer exists because of the application of IFRS 17
- May designate a financial asset as measured at fair value through profit or loss if, in doing so, it eliminates or significantly reduces an accounting mismatch that would otherwise arise from measuring assets or liabilities or recognising the gains and losses on different bases
- May irrevocably elect to designate an investment in an equity instrument at fair value through other comprehensive income, provided that equity instrument is neither held for trading nor contingent consideration recognised by an acquirer in a business combination to which IFRS 3 applies;
- May revoke its previous designation of an investment in an equity instrument at fair value through other comprehensive income

⁶⁸⁸ IFRS 17.C29.

An entity must apply the above based on the facts and circumstances that exist at the date of initial application of IFRS 17. An entity must apply these designations and classifications retrospectively. In doing so, it must apply the relevant requirements in IFRS 9. The date of initial application for that purpose is deemed to be the date of initial application of IFRS 17.⁶⁸⁹

Any changes resulting from applying the above do not require the restatement of prior periods. However, the entity may restate prior periods only if it is possible without the use of hindsight. This may result in a situation whereby the comparative period is restated for IFRS 17 (which may include changes that affect financial instruments within the scope of IFRS 9). For example, accounting for investment components that are separated, but not for consequential changes resulting in the classification of financial assets (this situation will also potentially arise when an entity has not previously applied IFRS 9 (see 17.7 below). If an entity restates prior periods, the restated financial statements must reflect all IFRS 9 requirements for those affected financial assets. If an entity does not restate prior periods, the entity should recognise, in the opening restated earnings (or other component of equity, as appropriate) at the date of initial application, any difference between:

- > The previous carrying amount of those financial assets; and
- The carrying amount of those financial assets at the date of initial application.⁶⁹⁰

Other disclosure requirements when redesignation of financial assets is applied are, as follows:

- The basis for determining financial assets eligible for redesignation
- The measurement category and carrying amount of the affected financial assets determined immediately before the date of initial application of IFRS 17
- The new measurement category and carrying amount of the affected financial assets determined after redesignation
- The carrying amount of financial assets in the statement of financial position that were previously designated as measured at fair value through profit or loss in order to significantly reduce or avoid an accounting mismatch that no longer exists⁶⁹¹
- Qualitative information that would enable financial statement users to understand:⁶⁹²
- How the entity applied the various options available for reassessment, revocation and designation described above
- Reasons for any designation or de-designation of financial assets measured at fair value through profit or loss in order to significantly reduce or avoid an accounting mismatch

⁶⁸⁹ IFRS 17.C30.

⁶⁹⁰ IFRS 17.C31.

⁶⁹¹ IFRS 17.C32.

⁶⁹² IFRS 17.C33.

Why the entity reached a different conclusion in the new assessments, applying the requirements of the business model test.

A simplified summary of the IFRS 9 redesignations above when initially applying IFRS 17 is, as follows:

IFRS 9 asset class	Re-designate?	New category
Amortised cost	Yes - mandatory reclassification if business model has changed and assets held in respect of an activity that is connected with contracts within the scope of IFRS 17	Fair value through other comprehensive income or fair value through profit or loss depending on the business model
	Yes - instrument by instrument election if eliminates or reduces an accounting mismatch that would otherwise arise from amortised cost measurement	Fair value through profit or loss
Fair value through other comprehensive income (debt securities)	Yes - mandatory if business model has changed and assets held in respect of an activity that is connected with contracts are within the scope of IFRS 17	Amortised cost or fair value though profit or loss depending on the business model
	Yes - if eliminates or reduces an accounting mismatch that would otherwise arise from fair value through other comprehensive income measurement	Fair value through profit or loss
Fair value through profit or loss (debt securities)	Yes - instrument-by- instrument election if designated due to accounting mismatch and accounting mismatch has ceased	Amortised cost or fair value through other comprehensive income depending on business model
Fair value through profit or loss (equity securities)	Yes - free election instrument by instrument	Fair value through other comprehensive income
Fair value through other comprehensive income (equity securities)	Yes - free election instrument by instrument	Fair value through profit or loss

17.6.2. Redesignation of financial liabilities

When IFRS 17 is applied, IFRS 9 states that:

- A previous designation of a financial liability measured at fair value through profit or loss should be revoked if that designation was previously made in order to eliminate or reduce an accounting mismatch, but the condition which caused the mismatch is no longer satisfied as a result of the application of IFRS 17.
- A financial liability may be designated as measured at fair value through profit or loss if that designation would not have previously been permitted because it did not satisfy the condition (i.e., because there was no accounting mismatch) and that condition is now satisfied as a result of the application of these amendments.

Such a designation and revocation should be made on the basis of the facts and circumstances that exist at the date of initial application of these amendments. That classification must be applied retrospectively.⁶⁹³ However, prior periods may only be restated if it is possible to do so without the use of hindsight.⁶⁹⁴

17.7. Entities that have not previously applied IFRS 9

An entity that adopts IFRS 9 at the same time that it adopts IFRS 17 may assess financial asset classifications, elections and designations while, at the same time, assessing the implications of the requirements of IFRS 17. An entity adopting IFRS 9 at the same time that it adopts IFRS 17 applies the transitional provisions of IFRS 9, which include a number of elections and (de)designations.

IFRS 17 requires any net differences resulting from its application to be recorded in net equity at the date of transition (i.e., 1 January 2022 for an entity applying IFRS 17 for the first time in its annual reporting period ending 31 December 2023). In contrast, IFRS 9's starting point records net differences resulting from its application in net equity at the date of initial application (i.e., 1 January 2023 for an entity applying IFRS 17 for the first time in its annual reporting period ending 31 December 2023). Comparative periods may be restated if it is possible to do so without the use of hindsight.⁶⁹⁵

However, even if comparative periods are restated, IFRS 9 cannot be applied to items already derecognised at the date of initial application (i.e., 1 January 2023 if IFRS 9 is first applied in a calendar year ending 31 December 2023).⁶⁹⁶ This means that IAS 39 accounting, for example, available-for-sale accounting, will remain in the comparative statement of comprehensive income for financial assets derecognised in that comparative period. The Board considered feedback from entities who were implementing IFRS 17 suggesting that an entity that, on initial application of IFRS 17, first applied IFRS 9 at the same time that it first applied IFRS 17, should be permitted to apply IFRS 9 to financial assets that were derecognised during the IFRS 17 comparative period. However, the Board disagreed with the suggestion on the grounds that the requirements in IFRS 9 relating to transition were subject to extensive deliberation and consultation by the Board.⁶⁹⁷

- ⁶⁹³ IFRS 9.7.2.39.
- 694 IFRS 9.7.2.40.
- 695 IFRS 9.7.2.15.
- ⁶⁹⁶ IFRS 9.7.2.1.
- ⁶⁹⁷ IFRS 17.BC398A-B.

The interaction between the measurement of the insurance liabilities and measurement of the financial assets backing those liabilities, as well as differences between the transition guidance in IFRS 17 and IFRS 9, may make it challenging to explain the presentation of financial instruments in the comparative period to users of the financial statements in the year of initial application of IFRS 17.

Appendix A: IFRS 17 - Defined terms

Term	Definition
Contractual service margin	A component of the carrying amount of the asset or liability for a group of insurance contracts representing the unearned profit the entity will recognise as it provides insurance contract services under the insurance contracts in the group.
Coverage period	The period during which the entity provides insurance contract services. This period includes the insurance contract services that relate to all premiums within the boundary of the insurance contract.
Experience	A difference between:
adjustment	 (a) For premium receipts (and any related cash flows such as insurance acquisition cash flows and insurance premium taxes) – the estimate at the beginning of the period of the amounts expected in the period and the actual cash flows in the period; or
	(b) For insurance, service expenses (excluding insurance acquisition expenses) – the estimate at the beginning of the period of the amounts expected to be incurred in the period and the actual amounts incurred in the period.
Financial risk	The risk of a possible future change in one or more of a specified interest rate, financial instrument price, commodity price, currency 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.
Fulfilment cash flows	An explicit, unbiased and probability-weighted estimate (i.e., expected value) of the present value of the future cash outflows minus the present value of the future cash inflows that will arise as the entity fulfils insurance contracts, including a risk adjustment for non-financial risk.
Group of insurance contracts	A set of insurance contracts resulting from the division of a portfolio of insurance contracts into, at a minimum, contracts issued within a period of no longer than one year and that, at initial recognition:
	(a) Are onerous, if any
	(b) Have no significant possibility of becoming onerous subsequently, if any; or
	(c) Do not fall into either (a) or (b), if any

Term	Definition		
Insurance acquisition cash flows	Cash flows arising from the costs of selling, underwriting and starting a group of insurance contracts (issued or expected to be issued) that are directly attributable to the portfolio of insurance contracts to which the group belongs. Such cash flows include cash flows that are not directly attributable to individual contracts or groups of insurance contracts within the portfolio.		
Insurance contract	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.		
Insurance contract services	 The following services that an entity provides to a policyholder of an insurance contract: (a) Coverage for an insured event (insurance coverage) (b) For insurance contracts without direct participation features, the generation of an investment return for the policyholder, if applicable (investment-return service) 		
	 (c) For insurance contracts with direct participation features, the management of underlying items on behalf of the policyholder (investment-related service) 		
Insurance contract with direct participation features	 An insurance contract for which, at inception: (a) Contractual terms specify that the policyholder participates in a share of a clearly identified pool of underlying items (b) The entity expects to pay the policyholder an amount equal to a substantial share of the fair value returns on the underlying items (c) The entity expects a substantial proportion of any change in the amounts paid to the policyholder to vary with the change in the fair value of the underlying items 		
Insurance contract without direct participation features	An insurance contract that is not an insurance contract with direct participation features.		
Insurance risk	Risk, other than financial risk, transferred from the holder of a contract to the issuer.		
Insured event	An uncertain future event covered by an insurance contract that creates insurance risk.		

Term	Definition	
Investment component	The amounts that an insurance contract requires the entity to repay to a policyholder in all circumstances, regardless of whether an insured event occurs.	
Investment contract with discretionary participation	A financial instrument that provides a particular investor with the contractual right to receive, as a supplement to an amount not subject to the discretion of the issuer, additional amounts:	
features	(a) That are expected to be a significant portion of the total contractual benefits	
	(b) The timing or amount of which are contractually at the discretion of the issuer	
	(c) That are contractually based on:	
	(i) The returns on a specified pool of contracts or a specified type of contract	
	(ii) Realised and/or unrealised investment returns on a specified pool of assets held by the issuer	
	Or	
	(iii) The profit or loss of the entity or fund that issues the contract	
Liability for	An entity's obligation to:	
incurred claims	(a) Investigate and pay valid claims for insured events that have already occurred, including events that have occurred but for which claims have not been reported, and other incurred insurance expenses	
	(b) Pay amounts that are not included in (a) and that relate to:	
	 (i) insurance contract services that have already been provided 	
	Or	
	(ii) Any investment components or other amounts That are not related to the provision of insurance Contract services and that are not in the liability for remaining coverage.	

Term	Definition
Liability for remaining coverage	 An entity's obligation to: (a) Investigate and pay valid claims under existing insurance contracts for insured events that have not yet occurred (i.e., the obligation that relates to the unexpired portion of the insurance coverage)
	 (b) Pay amounts under existing insurance contracts that are not included in (a) and that relate to: (i) Insurance contract services not yet provided (i.e., the obligations that relate to future provision of insurance contract services)
	Or (ii) Any investment components or other amounts that are not related to the provision of insurance contract services and that have not been transferred to the liability for incurred claims.
Policyholder	A party that has a right to compensation under an insurance contract if an insured event occurs.
Portfolio of insurance contracts	Insurance contracts subject to similar risks and managed together.
Reinsurance contract	An insurance contract issued by one entity (the reinsurer) to compensate another entity for claims arising from one or more insurance contracts issued by that other entity (underlying contracts).
Risk adjustment for non-financial risk	The compensation an entity requires for bearing the uncertainty about the amount and timing of the cash flows that arises from non-financial risk as the entity fulfils insurance contracts.
Underlying items	Items that determine some of the amounts payable to a policyholder. Underlying items can comprise any items; for example, a reference portfolio of assets, the net assets of the entity, or a specified subset of the net assets of the entity.

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Determining eligibility of the premium allocation approach under IFRS 17 for Non-Life insurers



Executive summary





Upon adoption of IFRS 17 *Insurance Contracts* (IFRS 17 or the Standard), many Non-Life (or Property & Casualty) insurers are seeking to manage costs and operational complexity and limit changes from their current accounting approach. As a result, many will seek to use the Premium Allocation Approach (PAA) for either all or, as much of their business as possible, as it is easier to apply and more aligned to the current accounting and reporting than the General Measurement Model in IFRS 17 (also known as "Building Block Approach" or "BBA").

As there are some restrictions to the use of the PAA, this paper explains how to assess the PAA eligibility requirements in practice and the steps that can be taken in order to determine how much of the business is eligible for the PAA. In many cases, Non-Life insurers may find that the vast majority of their business can adopt the PAA. However, if not all contracts of an entity can be accounted for under the PAA, then the entity needs to apply the BBA to those contracts.

Why PAA for Non-Life insurers?

Under the PAA, the valuation of the unearned portion of the liability (referred to as the liability for remaining coverage (LFRC) in IFRS 17) can be seen as being similar to a calculation under current accounting of (i) the unearned premium reserve less (ii) deferred acquisition costs less (iii) premium receivables (plus (iv) any additional unexpired risk reserve for unprofitable business). The liability for incurred claims (LFIC) represents the estimate of amounts due to policyholders for claims incurred from earned portions of the liability. This is calculated based on estimates of future cash flows adjusted for the time value of money plus a risk adjustment for non-financial risk.

The PAA is potentially attractive for Non-Life insurers as it is simpler to calculate than the BBA. The PAA is more familiar as it can be more readily compared with the current accounting approaches, although there are some differences in measurement, particularly in relation to LFIC. In addition, and consistent with the simplified nature of the PAA, the disclosure requirements are expected to be less onerous under the PAA compared to the BBA.

It is also useful as it may be more comparable to peers who do not adopt IFRS 17 (particularly important in the Specialty market where many insurers report under U.S. GAAP¹).

^{1.} Although U.S. GAAP uses the same fundamental mechanics of an allocation of the total premium, differences exist between the accounting model for short-duration contracts under U.S. GAAP and the PAA under IFRS 17.
Which contracts qualify for the PAA?

There are criteria in IFRS 17 for determining whether the PAA can be applied to a group of (re)insurance contracts (group). A group is eligible for the PAA if either²:

- (a) the coverage period of each contract in that group is one year or less, or
- (b) if using the PAA would produce a measurement of the LFRC for the group that would not differ materially from the one that would be produced applying the BBA.

As a result, a Non-Life insurer that only writes contracts that are one year or less in coverage period can use the PAA without any further work needed to demonstrate eligibility.

However, many insurers will write at least some types of contracts that are longer than one year in coverage period. This raises the practical question of how an insurer can determine which contracts that are longer than one year can be accounted for under the PAA by applying condition (b) above, as this requires some form of "materiality test" to be passed. This paper discusses how this materiality test could be applied in determining the PAA eligibility of a group. Materiality in this context should be as defined by IAS 1 Presentation of Financial Statements (IAS 1) and IAS 8 Accounting Policies, Changes in Accounting Estimates and Errors (IAS 8). In addition to the general requirements of IAS 1 and IAS 8, there are specific materiality requirements in IFRS 17. Eligibility for the application of the PAA must be assessed for each group of insurance contracts and therefore materiality should be considered at the group level. For groups which contain any contract with a coverage period longer than one year, PAA eligibility is determined by applying a range of future scenarios that an entity would reasonably expect, within the context of the particular group. The carrying amount of the LFRC at each reporting date under those scenarios is compared between the PAA and BBA. When any difference between the carrying amount of the group's LFRC between the PAA and BBA at each reporting date in all scenarios is below a specified threshold of materiality, then the group is eligible for the PAA. This materiality threshold should be designed to assess if the carrying amount of the LFRC at each reporting date under the PAA is not materially different from the carrying amount of the LFRC under the BBA for the particular group.

² IFRS 17.53

Main sources of difference between the PAA and BBA



Under IFRS 17, insurance liabilities are split into two parts: LFIC and LFRC. The components for each part are illustrated in the diagram below:

LFIC and LFRC under the PAA and BBA



earned premium (net of cumulative acquisition cash flows paid and amortized)



In nearly all situations the LFIC is the same between the PAA and BBA³. The criteria for PAA eligibility only depend on measurement of the LFRC and the coverage period of the underlying contracts, so the measurement of the LFIC is not further discussed in this paper.

There are a number of situations in which the PAA and BBA can produce different measurements for the LFRC, which could impact on the eligibility of contracts for applying the PAA. In the sections below we discuss some of the most prominent sources of difference and provide illustrative examples where relevant. They are:

 (a) Changing expectations of profitability for the remaining coverage period (e.g., due to changes in claims expectation)

- (b) Changing market yield curves
- (c) Earnings patterns which are influenced by the pattern of claim events arising (e.g., seasonality of catastrophe exposures)

The above list of sources of differences is not exhaustive; various other factors could contribute to differences between the PAA and BBA outcomes. In addition, the accounting simplifications available under the PAA of immediately expensing the acquisition cash flows⁴ and/or not accreting interest under the PAA if there is no significant financing component⁵, would also have an impact on differences in the LFRC between the PAA and BBA, although these simplifications would not impact the outcome of the PAA eligibility assessment. For illustrative purposes, these differences have been ignored in the simplified examples provided below.

³ Under the PAA, when the cash flows are expected to be paid or received in one year or less from the date the claims are incurred, then the entity may choose not to adjust those cash flows for the time value of money. This could cause a difference in LFIC under the PAA and BBA but would not affect the comparison of the LFRC between the two models.

⁴ IFRS 17.59(a)

⁵ IFRS 17.56

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Changing expectations of profitability for the remaining coverage

When the expectation of the remaining profitability changes during the coverage period of a group, so that it is still profitable, the results can differ under the PAA and BBA.

In this situation, the PAA would not recognise this improvement or deterioration in profitability until the exposure is earned (i.e., the insurance revenue for the cover and the related incurred claims and expenses are recorded in profit or loss). Under the BBA, however, per paragraph 44 of the Standard, the CSM would be adjusted for this change in profitability first before the proportion of CSM that relates to the current period being recognised as insurance revenue. This is due to IASB's conclusion that allocating the amount of CSM adjusted for the most up-to-date assumptions provides the most relevant information about the profit earned from service provided in the period and the profit to be earned in the future from future service⁶. As such, the BBA may already recognise a portion of this change in expectations through the release of the CSM.

Example 1 shows a 2-year contract which is expected to be profitable at inception, but which has a change in estimate for the remaining profitability at the end of year 1 due to a change in expected future claims, with all other factors remaining equal. It shows how the LFRC changes under both the PAA and BBA.

Example 1: BBA and PAA LFRC after a change of expectations on future profitability



LFRC after changes in LR expectation

⁶ IFRS 17.BC279(b).

⁷ In this scenario, the LFRC under the BBA does also include a loss component.

We note the following from this example:

- 1. At inception the PAA and BBA give the same LFRC (this will always be the case).
- If the estimate of future claims experience is unchanged at the end of the first reporting period, then the PAA and BBA will produce the same LFRC (the "Base Case").
- 3. Where expected future claims increase, the BBA gives a higher estimate of LFRC (and vice versa with a reduction in expected future claims).
- 4. Where the increase in expected future claims is larger than the remaining CSM, the BBA and PAA give the same LFRC (the CSM goes to zero under the BBA and under the PAA, a loss component liability is set up using the IFRS 17 fulfilment cash flows (FCF) under the BBA).

The significance of these differences will vary depending on how likely it is that the expected profitability of the remaining coverage might change and how much it may change.

The change in the expectations of future profitability is more likely to make an impact in the following situations:

- Longer duration contracts (more chance of a change happening)
- Contracts where the expected loss ratio estimates are uncertain (e.g., new lines of business)
- Contracts which might be exposed to shocks which might affect expected future claims
- Contracts which have a longer settlement period (e.g., any change in future claims will have a greater second order discounting effect)

It is important to note that this consideration is around the expectations relating to remaining future coverage under the LFRC. For instance, the actual occurrence of catastrophes will impact the LFIC and will be treated in the same way under both the PAA and BBA. However, this experience may affect the entity's expectations of future loss events, and may as such indirectly affect the PAA eligibility assessment.

Differences between the PAA and BBA will no longer exist once the coverage period of the group has ended as at that point the only liability remaining will be the LFIC and the PAA and BBA will apply the same measurement approach to this liability.⁸

Change in yield curves

Yield (discount rate) curves are an integral part of IFRS 17, due to the requirement under the Standard to adjust the estimates of future cash flows to reflect the time value of money and the financial risks related to those cash flows. The yield curves applied to the estimates of future cash flows should be consistent with observable market information and hence any changes in market yield curves would have an impact on the measurement of insurance liabilities.

When yield curves change from the yields at the initial recognition of the contract, differences can arise between the PAA and BBA.

The LFRC under the BBA is calculated based on the sum of the following components:

- CSM (calculated using the yield curves at initial recognition)
- Best estimate of cash flows for the remaining coverage (calculated using the current yield curves)
- Risk adjustment (calculated using the current yield curves)

For contracts without a loss component, the LFRC for the PAA is effectively based on the unearned premium, net of deferred insurance acquisition cash flows and premium receivables. An amount is included for accretion of interest if necessary⁹, which is based on the yield curves at initial recognition of the contract (or groups). As a result, the PAA is not affected by changes in the current yield curve unless the contract becomes onerous. For the BBA, the discounted future cash flows are affected by changes in the yield curve since the discount rates applied need to be updated at each reporting period, but the CSM is not. Therefore, if yield curves change from the initial recognition of the contract, this will result in a difference in the LFRC between the PAA and BBA.

Example 2 shows a 2-year contract which is expected to be profitable at inception. There is a change in yield curves at the end of year 1 resulting in a change to the discount rate used under the BBA. It shows how the LFRC changes under both the PAA and BBA due to a change in yield curves, with all other factors remaining equal.

⁸ Unless the entity chooses not to discount future cash flows for the time value of money for a LFIC under the PAA with an expected claims settlement period of less than a year.

⁹ IFRS 17.56 specifies that entities should adjust the carrying amount of the LFRC to reflect the time value of money and the effect of financial risks for groups of contracts that contain a significant financing component, unless the entity at initial recognition expects that the time between providing each part of the services and the related premium due date is no more than one year.



Example 2: BBA and PAA LFRC after a change in yield curve

We note the following from this example:

- 1. At inception the PAA and BBA give the same LFRC (this will always be the case).
- If the yield curve is exactly as expected at the end of the first reporting period then the PAA and BBA will produce the same¹⁰ LFRC (the "Base Case").
- Where the yield curve decreases then the LFRC under the BBA increases as the discounted future cash flows increase (the CSM is unchanged as this is based on the yields at initial recognition) whereas the LFRC under the PAA is unchanged.
- 4. Where the yield curve increases then the LFRC under the BBA decreases as the discounted future cash flows decrease (the CSM is unchanged as this is based on the yields at initial recognition) whereas the LFRC under the PAA is unchanged.
- 5. Where the yield curve change is so significant that the discounted future cash flows are larger than the LFRC under the PAA, then a loss component is added under the PAA if facts and circumstances indicated that the group of insurance contracts had become onerous and an onerous contract test was therefore performed. Under the BBA, the discounted future cash flows are updated but the CSM is unchanged as the effect of changes in discount rates is reported in the income statement.

The impact of this difference and its significance will depend on the following sensitivities:

- The length of the coverage period.
- How large the discounting impact was to start with (current low interest environments in many economies mean that the impact is often small for these portfolios).
- How large a change might be reasonably expected in the currencies of the liabilities during the coverage period.
- Claims settlement pattern of the liabilities, as longer tailed business are more likely to be affected by discounting than shorter tailed business.

Under the PAA, an entity can choose not to adjust the LFRC to reflect the time value of money if at initial recognition, the entity expects that the time between providing each part of the coverage and the related premium due date is no more than a year. If the entity chooses not to adjust the LFRC to reflect the time value of money under the PAA, then on one hand, there will be the difference of time value of money (included in the fulfilment cash flow calculations under the BBA, but not taken into account for the PAA). On the other hand, the above effect would be limited by the fact that the choice not to reflect time value of money can only be applied if the difference between the premium due date and providing each part of the coverage is one year or less (thereby limiting the impact).

¹⁰ Other factors, e.g., treatment of interest accretion, could result in a difference in LFRC between the PAA and BBA. For illustrative purposes in this example, these differences have been ignored.

Uneven earnings pattern

Another source of difference between the PAA and BBA arises from the difference in revenue recognition over time. In particular, the CSM under the BBA is allocated based on coverage units reflecting the expected quantity of benefits and duration of contracts in the group¹¹ while revenue under the PAA is based on the passage of time or, if significantly different from passage of time, the expected pattern of release of risk¹² (determined through the expected timing of incurred insurance service expenses). In particular for contracts where the timing of when claims occur is not evenly spread over the passage of time due to the seasonality of claims, there could be differences in the PAA and BBA estimates of the LFRC as the release of risk may be significantly different from the passage of time. For example, property insurance contracts exposed to catastrophes tend to have uneven earnings patterns.

Example 3 shows a 2-year contract where different service (or "earning") patterns have been used to release revenue. It shows how the LFRC can differ under the PAA and BBA.



CSM

Example 3: BBA and PAA LFRC arising from different earnings patterns

FCF (inc. risk adjustment)

We note the following from this example:

- 1. At inception the PAA and BBA give the same LFRC (this will always be the case).
- When the earnings patterns are in line for both BBA and PAA, then the PAA and BBA will give the same¹⁰ LFRC (the "Base Case").
- Where the earnings pattern is assumed to be more accelerated under the PAA than the allocation of coverage units (e.g., through sum insured) for the BBA, then the PAA will produce a lower LFRC, and vice versa.

The impact of this difference and its significance will depend on how the coverage units are determined for the BBA and what the expected claims pattern is for the PAA release of revenue. For many contracts these will be very similar, but some contracts will exhibit differences. Note that for any contract where there is seasonality (e.g., due to a catastrophe "season") but the contract is one year or less in coverage period, then the PAA can still be used even if there might be differences between the PAA and BBA.

LFRC (excl. loss component)

In this example the risk adjustment has been chosen to be a simple percentage of the claims. The risk adjustment can also contribute to uneven earnings patterns if not released in line with claims.

11 IFRS 17.B119

¹⁰ Other factors, e.g., treatment of interest accretion, could result in a difference in LFRC between the PAA and BBA. For illustrative purposes in this example, these differences have been ignored.

¹² IFRS 17.B126



Basis for the PAA eligibility assessment





For groups that contain contracts with a coverage period of more than one year, the entity may use the PAA if it reasonably expects that the PAA measurement of the LFRC for the group would not differ materially from the one that would be produced applying the requirements of the BBA¹³.

This requirement means that the PAA eligibility has to be assessed at the level of a group. Therefore, the materiality thresholds for assessing the outcome should be determined and evaluated at the level of the group. IFRS 17 states that the criterion of paragraph 53(a) is not met if, at the inception of the group of contracts, an entity expects significant variability in the FCF that would affect the measurement of the LFRC during the period before a claim is incurred. Variability in the FCF increases with, for example¹⁴:

- The extent of future cash flows related to any derivatives embedded in the contracts.
- The length of the coverage period of the group of contracts.

As IFRS 17 does not contain any further specific guidance on how to determine whether outcomes are materially different, judgement will need to be applied in setting the thresholds and determining how these thresholds are applied. This requirement also introduces a need for determining future scenarios that one would reasonably expect. As IFRS 17 does not contain any specific guidance on what 'reasonably expects' entails, judgement will need to be applied in identifying the range of relevant scenarios within the context of the specific features and circumstances of the group (e.g., duration of the contracts, expected profitability, volatility of profitability, earnings pattern, payment pattern, currency etc.). The future scenarios should reflect the variability in the FCF the entity expects that would affect the measurement of the LFRC during the period before a claim is incurred.

Having determined how to assess whether an outcome is materially different and having identified the range of scenarios for these considerations, the entity then assesses the PAA eligibility for a specific group following this basis. The entity may also wish to consider whether to perform this testing on a sample of groups. However, care needs to be taken as the sample selected needs to be representative of the products in the portfolio covered by the assessment.

¹³ IFRS 17.53(a) 14 IFRS 17.54

Applying IFRS 17 PAA eligibility criteria

Once the grouping of contracts has been determined, the entity can ascertain which groups are eligible for the PAA.

For each group, the following test is performed to determine if it is eligible for treatment under the PAA in line with Diagram 1.

Diagram 1: Eligibility test for 'not materially differ'



Do the future LFRCs differ materially in reasonably possible future scenarios?

For the groups which have contracts with coverage periods of more than one year, it is necessary to determine for each future reporting date whether the difference in LFRC under reasonably possible future scenarios is material to the group. This is determined by calculating the difference in LFRC between the PAA and BBA in a base case and a number of shocked scenarios over the duration of the coverage period. Examples of shocks to be considered could be:

- Increases/reductions in expected loss ratios
- Increases/reductions in yield curve
- Calculating the difference when the earnings pattern under the PAA is estimated to be different from the BBA.

In applying these shocked scenarios, a decision needs to be made on when to apply the shocks. There are different ways to look at shocked scenarios, for example, one such scenario at each future reporting period during the remaining coverage of the contracts or a more severe shocked scenario at one of the future reporting dates.

Various metrics could be adopted to quantify how different the outcomes are between the two approaches. One example is to compare the difference in LFRC between the PAA and BBA at each reporting date relative to the total expected premium over the coverage period. Another example may be to compare the relative difference between the PAA and BBA to the LFRC at the relevant reporting dates within the coverage period (e.g., the PAA outcome as a percentage of the BBA outcome). With this approach, an entity should consider the potential 'gearing effect' later in the life of the contract when the LFRC becomes small. Whichever metric is selected, the entity should assess and document the appropriateness in the context of specific groups being tested.

The entity would then have to evaluate the results of the metric in terms of PAA eligibility outcome. An approach that could be adopted is that if the largest difference over all the scenarios tested is greater than a certain (percentage) threshold of the selected metric, then the group is deemed to fail the test and is not eligible for treatment under the PAA under IFRS 17. If all the differences remain within the threshold, then the group passes the test and qualifies for treatment under the PAA. This materiality threshold should be set by management (and also discussed with the entity's auditors).

Once this test has been passed or failed, the result will hold for all future reporting periods as the test is performed on initial recognition only. Therefore, there is no need to re-test any of the groups subsequently.

A possible approach to determining whether there are material differences under reasonably possible shocks is summarised in Diagram 2.



Diagram 2: Determining 'not differ materially' under reasonably possible scenarios



Operational impact of PAA eligibility testing



To assess PAA eligibility, a bespoke model will need to be developed to assess the difference between the two approaches. This could be implemented using measurement models with the following capabilities:



under IFRS 4.

cost should be small.

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Good General Insurance (International) Limited

Selected illustrative disclosures for IFRS 17 *Insurance Contracts* (Premium allocation approach), IFRS 9 *Financial Instruments* and IFRS 7 *Financial Instruments: Disclosures*

International GAAP®

Illustrative consolidated financial statements





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Abbreviations and key

The following styles of abbreviation are used in these International GAAP[®] Illustrative disclosures:

12mECL	12 month expected credit loss
AFS	Available for sale
Commentary	The commentary explains how the requirements of IFRS have been implemented in arriving at the illustrative disclosure
CSM	Contractual service margin
EAD	Exposure at default
ECL	Expected credit loss
EIR	Effective interest rate
FVOCI	Fair value through other comprehensive income
FVPL	Fair value through profit or loss
GAAP	Generally Accepted Accounting Principles/Practice
GM	General model
Good Insurance	Good Insurance (International) Limited and subsidiaries for the year ended 31 December 2017
НТМ	Held to maturity
IAS 1.41	International Accounting Standard No. 1, paragraph 41
IAS 1.BC13	International Accounting Standard No. 1, Basis for Conclusions, paragraph 13
IASB	International Accounting Standards Board
IGAAP	EY's International GAAP®
IFIE	Insurance finance income or expenses
IFRS 9.5.4.1	International Financial Reporting Standard No. 9, chapter 5.4, paragraph 1
IFRS 17 Appendix A	International Financial Reporting Standard No. 17, Appendix A
IFRS 17.44	International Financial Reporting Standard No. 17, paragraph 44
IFRS 17.B5	International Financial Reporting Standard No. 17, Appendix B (application guidance), paragraph 5
L&R	Loans and receivables
LFRC	Liability for remaining coverage
LFIC	Liability for incurred claims
LGD	Loss given default
LTECL	Lifetime expected credit loss
Note X	Reference to a section of Notes that are not included in this publication, but would otherwise be required in a complete set of financial statements prepared in accordance with IFRS
OCI	Other comprehensive income
ΡΑΑ	Premium allocation approach
PD	Probability of default
SPPI	Solely payments of principal and interest
VFA	Variable fee approach

Introduction

The purpose of this publication is to provide illustrative disclosures to meet the requirements of IFRS 17 *Insurance Contracts* and IFRS 9 *Financial Instruments* related to groups of insurance contracts accounted for under the premium allocation approach (PAA) described in IFRS 17. The disclosures are presented as a series of extracts from a set of full financial statements for Good General Insurance (International) Limited (Good General, or the Company) for the year ended 31 December 2023. Good General is a limited liability insurance subsidiary of Good Insurance (International) Limited (Good Insurance). Good General is a fictitious entity, incorporated in the fictitious country of Euroland. The functional currency of the Company is the euro.

This publication is not a full set of illustrative financial statements in accordance with International Financial Reporting Standards (IFRS). It focuses on the new presentation and disclosure requirements arising from IFRS 17 and IFRS 9 that impact on a non-life insurance entity applying the premium allocation approach (the PAA), and it does not include all IFRS 7 disclosures not altered by IFRS 9. Furthermore, it does not consider any disclosures that may be required by other standards such as IFRS 15 *Revenue from Contracts with Customers* or IFRS 16 *Leases*. The Company adopted both IFRS 17 and IFRS 9 for the first time in the annual reporting period commencing 1 January 2023.

Good General disaggregates information presented about insurance contracts in the notes to the financial statements by major product line. Good General has four major product lines that it manages and operates independently. As it does not have debt or equity instruments that are traded in a public market and is not in the process of issuing instruments in a public market, Good General is not required to make disclosures under IFRS 8 *Operating Segments*. The four product lines are:

- Personal accident insurance, issuing contracts that provide compensation following an accident
- Marine insurance, issuing contracts to compensate for loss or damage to ships and cargo
- Property insurance, issuing contracts to compensate for loss or damage to structures and contents, arising from fire, theft, flood and weather damage
- Liability reinsurance assumed, issuing contracts to provide insurers with payments in the event of claims made by their policyholders for losses arising from injuries and damage to people and/or property. Reinsurance is provided on a quota share basis and includes both treaty and facultative arrangements.

The illustrative presentation and disclosures in this publication are relevant for insurance and reinsurance products issued, and reinsurance held, accounted for using the PAA in IFRS 17. Other publications illustrate disclosures for products accounted for using the default measurement model (the general model) in <u>Good Life Insurance (International) Limited</u> and variable fee approach (VFA) in IFRS 17.

We draw attention to the disclosures in Note <u>11</u> on insurance and reinsurance contracts that reflect the roll-forward of the net asset or liability for insurance and reinsurance contracts. These disclosures require significantly more information than is currently presented in IFRS financial statements, and it is expected that these will be one of the areas requiring most effort from preparers as part of their implementation of IFRS 17.

IFRS references are shown on the margin of each page in the document indicating the specific IFRS paragraph that outlines the accounting treatment or disclosure for the particular line item or block of narrative.

We use 'Note X' when referring to a section of the Notes that is not included in this publication, but would otherwise be required in a complete set of financial statements prepared in accordance with IFRS.

Some disclosures are made in these financial statements merely for illustrative purposes, even though they may relate to items or transactions that are not material for the Company.

Commentaries are provided to explain the basis for the disclosure, or to address alternative disclosures not included in the illustrative financial statements. A more comprehensive list of disclosure requirements can be found in <u>EY's Online</u> <u>International GAAP® Disclosure Checklist</u>, and further commentary on IFRS 17 is available in EY's <u>Applying IFRS 17 - A</u> <u>closer look at the new Insurance Contracts standard</u>'. For questions that may arise as to the IFRS requirements, it is essential to refer to the relevant source material and, where necessary, to seek appropriate professional advice.

The standards applied in these illustrative disclosures are those that are relevant for this publication, were in issue as at 30 June 2020, including final amendments to IFRS 17 issued 25 June 2020, and effective for annual periods beginning on or after 1 January 2023.

The preparation approach

In order to prepare the illustrative disclosures, we have used an internally developed model containing hypothetical transactions, cash flows, assets and liabilities and have used data modelling to produce the numbers reflected.

All the figures are for illustrative purposes to demonstrate disclosure requirements of IFRS 17 and IFRS 9, and may not be realistic, or reflect actual market conditions or features of real insurance products. Further details of the products and disclosure assumptions are set out below.

The disclosures reflect modelling of several groups of contracts included in the personal accident, marine, property and liability reinsurance major product lines.

The requirements of IFRS 17 are applied to groups of insurance contracts as described in paragraphs 14-24 of IFRS 17. These groups of insurance contracts are the unit of account for IFRS 17 measurement purposes and reflect portfolio, period of issue and profitability level. Some groups are assumed to be issued in a foreign currency. Groups of contracts with different levels of profitability (both onerous and non-onerous at initial recognition) are included. The model contains reinsurance contracts held, which cede some of the risks relating to the marine insurance product groups based on a simple quota share arrangement. Where onerous contracts issued by the Company have been reinsured, a loss recovery component has been recognised. The liability reinsurance product line includes profit commission arrangements (accounted for as a non-distinct investment component in this illustrative publication). 'Assets for insurance acquisition cash flows' have been recognised in the statement of financial position representing acquisition cash flows that are expected to be recovered from premiums received on renewal of existing contracts (Refer to Note <u>11</u>).

Other modelling and disclosure assumptions to note include:

- Premiums received from insurance and reinsurance contracts issued, less payments of reinsurance premiums for reinsurance contracts held, are mostly invested in financial assets taking the form of debt instruments
- Some financial assets are measured at fair value through profit or loss, some at fair value through other comprehensive income, while others are measured at amortised cost
- ▶ The disclosures reflect the choice (under IFRS 17.88) to disaggregate insurance finance income and expense, in respect of contracts issued in the personal accident insurance product line, between profit or loss and other comprehensive income. With the amount recognised in profit or loss determined by a systematic allocation of the expected total insurance finance income or expenses over the duration of the group of contracts. Other product lines have not made the election to disaggregate.

Key new disclosures since February 2019 publication:

This publication has been updated for the amendments to IFRS 17 issued 25 June 2020.

The most significant changes made in the light of these amendments include:

- Accounting for assets for insurance acquisition cash flows refer to:
 - ▶ Accounting policies Note <u>2.2.5.5</u>
 - ▶ Significant estimates and judgements Note <u>5.1.1</u>
 - > Detailed disclosures required by IFRS 17 included in the following notes (shaded for reference):
 - ▶ Insurance service expense Note <u>6</u>
 - ▶ Personal accident insurance Note <u>11.1.1</u>
 - Marine Insurance Note <u>11.1.2</u>
 - Liability reinsurance issued Note <u>11.1.4</u>
- Accounting for a loss-recovery component on initial recognition of an onerous group of underlying insurance contracts

 refer to:
 - Accounting policies Notes <u>2.2.5.2</u> and <u>2.2.6.3</u>
 - Detailed disclosures required by IFRS 17 included in (shaded for reference):
 - Marine Insurance Note <u>11.2.1</u>

Statement of profit or loss and other comprehensive income

For the year ended 31 December 2023

In €000	Notes _	2023	2022 restated	IAS 1.81A, IAS 1.9(d), IAS 1.10(b), IAS 1.51(b)-(e) IAS 1.29, IAS 1.32 IAS 1.104,
		10.000	10 707	IAS 1.46, IAS 1.45
Insurance revenue		10,829	10,727	IAS 1.82(d)(II), IFRS 17.83
Insurance service result before reinsurance contracts held	<u>6</u>	(9,421) 1,408	(9,643) 1,084	AS 1.02(80), II KS 17.04
Allocation of reinsurance premiums		(633)	(966)	IFRS 17.86
Amounts recoverable from reinsurers for incurred claims		625	934	IFRS 17.86
Net expense from reinsurance contracts held		(8)	(32)	IAS 1.82(ac), IFRS 17.82
Insurance service result	-	1,400	1,052	IFRS 17.80(a)
Interest revenue calculated using the effective interest method		781	644	IAS 1.82(a)(i)
Other interest and similar income		358	334	
Net fair value gains/(losses) on financial assets at fair value through profit or loss		104	(14)	IFRS 7.20(a)(i)
Net fair value gains on derecognition of financial assets measured at fair value through other comprehensive income		6	-	IAS 1.82(aa)
Impairment loss on financial assets		(5)	(2)	IAS 1.82(ba)
Net foreign exchange income/(expense)		8	(35)	
Total investment income	<u>7</u>	1,252	927	
Insurance finance expenses for insurance contracts issued	<u>7</u>	(265)	(237)	IAS 1.82(bb), IFRS 17.87
Reinsurance finance income for reinsurance contracts held	<u>7</u>	36	9	IAS 1.82(bc), IFRS 17.82
Net insurance financial result	-	(229)	(228)	
Other income and expense		(210)	(191)	
Profit before tax	-	2,213	1,560	
Income tax expense		(231)	(172)	IAS 1.82(d), IAS 12.77
Profit for the year	•	1,982	1,388	IAS 1.81A(a)
Other comprehensive income				
OCI to be reclassified to profit or loss in subsequent periods				IAS 1.82A(a)(ii)
Change in fair value of financial assets	<u>7</u>	179	(35)	IFRS 7.20(a)(viii)
Amount reclassified to profit or loss	7	(1)	2	IFRS 7.20(a)(VIII)
Debt instruments at fair value through other comprehensive income	<u>7</u>	178	(33)	
Insurance finance (expense)/income for insurance contracts issued	<u>7</u>	(13)	4	IFRS 17.88(b), 89(b)
Net insurance financial result		(13)	4	
Income tax relating to items that may be reclassified		(33)	6	
Total other comprehensive income	-	132	(23)	IAS 1.81A(b)
Total Comprehensive income		2,114	1,365	IAS 1.81A(c)

The accounting policies and Notes on pages 11 to 80 form part of, and should be read in conjunction with, these financial statements.

Commentary

Paragraph 10 of IAS 1 *Presentation of Financial Statements* suggests titles for the primary financial statements, such as 'Statement of profit or loss and other comprehensive income' or 'Statement of financial position'. Entities are, however, permitted to use other titles, such as 'income statement' or 'balance sheet'. The Company applies the titles suggested in IAS 1.

The Company has elected as an accounting policy choice to present a single statement of profit or loss and other comprehensive income rather than two statements - a statement of profit or loss and a statement of comprehensive income. IFRS 17.80 requires entities to disaggregate the amounts recognised in the statement of profit or loss and other comprehensive income (OCI) into: an insurance service result, comprising insurance revenue and insurance service expenses, and insurance finance income or expenses.

Alternatively, the Company could consider a different layout of the statement of profit or loss and other comprehensive income considering the requirement in IAS 1.82(a) to present the total revenue on the face of the statement of profit or loss depending on its activities and other sources of revenue.

IFRS 17.81 gives entities the option to disaggregate the change in risk adjustment for non-financial risk between the insurance service result and insurance finance income or expenses. If entities do not make such a disaggregation, they must include the entire change in the risk adjustment for non-financial risk as part of the insurance service result. The Company elected not to disaggregate the change in risk adjustment for non-financial risk and includes the entire change as part of the insurance service result.

IFRS 17.86 allows entities to select one of the following presentation options: (i) to present the income or expenses from a group of reinsurance contracts held, other than insurance finance income or expenses, as a single amount; or (ii) to present separately the amounts to be recovered from the reinsurer and an allocation of the premiums paid that together give a net amount equal to that single amount. The Company has elected to present the amounts recoverable from the reinsurer and an allocation of the premiums paid separately. Amounts relating to the recovery of losses relating to reinsurance of onerous direct contracts are included as amounts recoverable from the reinsurer.

IAS 1.97 requires entities to disclose the nature and amounts of expenses when significant, therefore a further breakdown of insurance service expenses and other income and expense may be required in the notes to financial statements. The requirement has not been affected by IFRS 17 or IFRS 9.

IAS 1.82(a), as updated with effect from the date an entity applies IFRS 9, requires the separate disclosure of interest revenue calculated using the effective interest method.

IFRS 17.88 provides an accounting policy choice relating to insurance finance income and expenses (IFIE). Total IFIE may either be presented in profit or loss as a whole, or it can be disaggregated between profit or loss and other comprehensive income (OCI). The amount presented in profit or loss is determined by a systematic allocation of the expected total IFIE over the duration of the group of insurance contracts.

For groups of contracts to which an entity chooses to disaggregate IFIE between profit or loss and OCI, IFRS 17 specifies the mechanism for determining amounts recognised in profit or loss in a period. The amount included in OCI in a period is the difference between total IFIE and the amount recognised in profit or loss. The standard allows this choice to be made at a portfolio level.

IFIE comprises the change in the carrying amount of the group of insurance contracts arising from:

(a) the effect of the time value of money and changes in the time value of money; and

(b) the effect of financial risk and changes in financial risk.

Insurers are likely to identify the assets they hold that relate to different portfolios of insurance contracts. If the related assets are predominantly measured at amortised cost or fair value through other comprehensive income (FVOCI), then they might choose to disaggregate IFIE for the related portfolio of insurance contracts issued or held between profit or loss and OCI. If the related assets are predominantly measured at fair value through profit or loss (FVPL), entities might not choose to disaggregate IFIE between profit or loss and OCI.

For groups of personal accident insurance contracts, the Company systematically allocates expected total IFIE over the duration of the group of contracts to profit or loss using discount rates determined on initial recognition of the liability for incurred claims for the group of contracts (see Note 5.1.3 for current discount rates). In the event of transfer of a group of insurance contracts or the derecognition of an insurance contract, the IFIE is transferred to profit or loss. For other groups of insurance contracts, the Company does not disaggregate IFIE between profit or loss and OCI.

Statement of financial position

		As at 31 D	As at 31 December			
	-	2023	2022	2022	IAS 1.10(a)	
In €000	Notes		restated	restated	IAS 1.51(c)	
Assets	-				IAS 1.51(d),(e)	
Cash and cash equivalents		2,276	1,888	2,700	IAS 1.54(i)	
Equity and debt instruments at fair value through profit or loss	<u>8</u>	6,597	5,452	4,517	IAS 1.54(d), IFRS 7.8(a)	
Debt instruments at fair value through other comprehensive income	<u>9</u>	11,356	10,688	9,526	IFRS 7.8(h)	
Debt instruments at amortised cost	<u>10</u>	1,036	987	940		
Insurance contract assets	<u>11</u>	35	49	37	IFRS 17.78(a)	
Reinsurance contract assets	<u>11</u>	808	1,408	1,401	IFRS 17.78(c)	
Total assets		22,108	20,472	19,121		
Liabilities						
Current tax liabilities		140	175	22	IAS 1.54(n)	
Insurance contract liabilities	<u>11</u>	13,004	13,589	13,764	IFRS 17.78(b)	
Deferred tax liabilities		163	41	50	IAS 1.56, IAS 1.54(0)	
Other payables		210	190	173	IAS 1.55	
Total liabilities		13,517	13,995	14,009		
Equity						
Issued capital		150	150	150	IAS 1.54(r),	
Retained earnings		8,177	6,195	4,807	IAS 1.54(r), IAS 1.78(e)	
Fair value reserve		268	126	152	IAS 1.54(r), IAS 1.78(e)	
Insurance/reinsurance finance reserve		(4)	6	3	IAS 1.54(r), IAS 1.78(e)	
Total equity		8,591	6,477	5,112		
Total liabilities and equity		22,108	20,472	19,121		

The accounting policies and Notes on pages 11 to 80 form part of, and should be read in conjunction with, these financial statements.

Commentary - Statement of financial position

Paragraph 60 of IAS 1 requires entities to present assets and liabilities either in order of their liquidity or by a separate classification on the face of the statement of financial position for current and non-current assets, and current and non-current liabilities, whichever provides information that is most reliable and relevant. The Company has presented its assets and liabilities in order of liquidity. A distinction based on expectations regarding recovery or settlement within 12 months after the reporting date and more than 12 months after the reporting date is presented in the Note <u>3.2.1</u>.

Under IAS 1.10(f), an entity must present an opening statement of financial position ('third balance sheet') when it changes its accounting policies, makes retrospective restatements or makes reclassifications, and that change has a material effect on the statement of financial position.

As per paragraph 79 of IFRS 17, any assets for insurance acquisition cash flows recognised are included in the carrying amount of the related portfolios of insurance contracts issued.

To apply IFRS 17 retrospectively, at the transition date entities must: identify, recognise and measure each group of insurance contracts as if IFRS 17 had always applied; derecognise any existing balances that would not exist had IFRS 17 always applied; and recognise any resulting net difference in equity.

Statement of changes in equity

For the year ended 31 December 2023

			l re	nsurance/ einsurance			IAS 1.106 IAS 1.51(b)-(e) IAS 1.78(e)
		Issued	Fair value	finance	Retained	Tota	1
In €000	Notes	capital	reserve	reserve	Earnings	eguity	<u>/</u>
At 31 December 2021, as previously reported		150	114	-	5,298	5,562	
Impact of initial application of IFRS 17	<u>1.1.1.3</u>	-	-	3	(438)	(435)	IAS 8.28(g)
Impact of initial application of IFRS 9	<u>1.1.3</u>	-	38	-	(53)	(15)	IAS 8.28(g)
Restated balance as at 1 January 2022		150	152	3	4,807	5,112	
Profit for the year		-	_	-	1,388	1,388	IAS 1.106(d)(i)
Other comprehensive income for the year		-	(26)	3	-	(23)	IAS 1.106(d)(ii)
Total comprehensive income		-	(26)	3	1,388	1,365	
Restated balance as at 31 December 2022		150	126	6	6,195	6,477	
Profit for the year		_	_	_	1,982	1,982	IAS 1.106(d)(i)
Other comprehensive income for the year		-	142	(10)	-	132	IAS 1.106(d)(ii)
Total comprehensive income		-	142	(10)	1,982	2,114	IAS 1.106(a)
Balance as at 31 December 2023		150	268	(4)	8,177	8,591	

The accounting policies and Notes on pages 11 to 80 form part of, and should be read in conjunction with, these financial statements.

Commentary - Statement of changes in equity

The Company included lines for the impact of initial recognition of IFRS 17 and IFRS 9 that show the impact of the restatement to opening balances as at the transition date.

The statement of changes in equity includes an insurance/ reinsurance finance reserve for the impact of changes in market discount rates on the insurance contract liabilities in the personal accident insurance product line. The Company has presented its statement of changes in equity net of tax, but presentation gross of tax and a corresponding line for related taxation is also acceptable.

Statement of cash flows

Commentary

For the purposes of this publication, we have not provided an illustrative cash flow statement. The layout of the Statement of cash flows has not been specifically changed by IFRS 17 or IFRS 9. Refer to the Statement of Cash flows in EY's <u>Good</u> <u>Insurance (2017) publication</u>.

Scope of the publication

Please refer to *Appendix 1- Scope of the Publication* for a summary of the disclosures required by IFRS 17 and IFRS 7 covered in this publication.

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Notes to the Financial Statements

Commentary

The following accounting policies and notes do not represent a complete set of accounting policies for a non-life insurer, but are a series of extracts relevant for this publication. We use 'Note X' when referring to notes that are not included in this publication, but would otherwise be required in a complete set of financial statements prepared in accordance with IFRS.

IAS 1.10(e)

IAS 1 112

IAS 1.113

IFRS 17 93-96

Good General presents disaggregated information about insurance contracts and reinsurance contracts by major product line in line with paragraph 95 and 96 of IFRS 17. The Company has four major product lines that it manages and operates independently: personal accident insurance, marine insurance, property insurance and liability reinsurance assumed. As each product line is managed and operates separately, the Company decided that this level of disaggregation would provide a basis for the users of the financial statements to assess the effect that contracts within the scope of IFRS 17 have on the financial position, financial performance and cash flows. In the Company's judgement, this level of disaggregation was necessary to ensure that useful information was not obscured either by the inclusion of a large amount of insignificant detail or by the aggregation of items that have different characteristics. Entities will make their own judgements about the appropriate level of disaggregation for their businesses and are not required by IFRS 17 to disaggregate information in the same way or at the same level of detail as the Company. Once the decision for appropriate level of disaggregation.

1. Changes in accounting policies and disclosures

1.1. New and amended standards and interpretations

In the not ea effect	se financial statements, the Company has applied IFRS 17 and IFRS 9 for the first time. The Company has arly adopted any other standard, interpretation or amendment that has been issued but is not yet ive.	IAS 8.14 IAS 8.28
1.1.1	. IFRS 17 Insurance Contracts	IAS 8.28(a)
IFRS	17 replaces IFRS 4 Insurance Contracts for annual periods on or after 1 January 2023.	
The C to IFF	ompany has restated comparative information for 2022 applying the transitional provisions in Appendix C S 17. The nature of the changes in accounting policies can be summarised, as follows:	IAS 8.28(b)
1.1.1	.1. Changes to classification and measurement	IAS 8.28(c)
The a	doption of IFRS 17 did not change the classification of the Company's insurance contracts.	IFRS 17
The C accou insura	ompany was previously permitted under IFRS 4 to continue accounting using its previous (Euroland GAAP) nting policies. However, IFRS 17 establishes specific principles for the recognition and measurement of ance contracts issued and reinsurance contracts held by the Company.	Арреник А
Under meas the ge	FIFRS 17, the Company's insurance contracts issued and reinsurance contracts held are all eligible to be ured by applying the PAA. The PAA simplifies the measurement of insurance contracts in comparison with eneral model in IFRS 17.	IFRS 17.53
The n	neasurement principles of the PAA differ from the 'earned premium approach' used by the Company under 4 in the following key areas:	
•	The liability for remaining coverage reflects premiums received less deferred insurance acquisition cash flows and less amounts recognised in revenue for insurance services provided	IFRS 17.55
•	Measurement of the liability for remaining coverage includes an adjustment for the time value of money and the effect of financial risk where the premium due date and the related period of services are more than 12 months apart	IFRS 17.56
•	Measurement of the liability for remaining coverage involves an explicit evaluation of risk adjustment for non-financial risk when a group of contracts is onerous in order to calculate a loss component (previously these may have formed part of the unexpired risk reserve provision)	IFRS 17.57
Þ	Measurement of the liability for incurred claims (previously claims outstanding and incurred-but-not- reported (IBNR) claims) is determined on a discounted probability-weighted expected value basis, and includes an explicit risk adjustment for non-financial risk. The liability includes the Company's obligation to pay other incurred insurance expenses	IFRS 17.59(b)
•	Measurement of the asset for remaining coverage (reflecting reinsurance premiums haid for reinsurance	IFRS 17.70A

Measurement of the asset for remaining coverage (reflecting reinsurance premiums paid for reinsurance IFRS 17.70A held) is adjusted to include a loss-recovery component to reflect the expected recovery of onerous contract losses where such contracts reinsure onerous direct contracts.

The Company expenses its insurance acquisition cash flows for its property insurance product line immediately upon payment and capitalises insurance acquisition cash flows for all other product lines.

For product lines where insurance acquisition cash flows are not immediately expensed, the Company allocates the acquisition cash flows to groups of insurance contracts issued or expected to be issued using a systematic and rational basis. Insurance acquisition cash flows include those that are directly attributable to a group and to future groups that are expected to arise from renewals of contracts in that group. Where such insurance acquisition cash flows are paid (or where a liability has been recognised applying another IFRS standard) before the related group of insurance contracts is recognised, an asset for insurance acquisition cash flows is recognised. When insurance contracts are recognised, the related portion of the asset for insurance acquisition cash flows is derecognised and subsumed into the measurement at initial recognition of the insurance liability for remaining coverage of the related group.

Commentary

In accordance with paragraph 59(a) of IFRS 17, entities may choose to recognise any insurance acquisition cash flows as an expense when it incurs those costs, provided the coverage period of each contract in the group is no more than one year. Where this option is not chosen, acquisition cash flows are required by paragraphs 28A and B35A of IFRS 17 to be allocated to groups of insurance contracts.

IFRS 4 does not prescribe the accounting treatment for insurance acquisition cash flows, therefore, if the accounting treatment chosen under IFRS 17 differs from their previous treatment, entities should disclose this change as required by paragraph 28(c) of IAS 8.

The Company's classification and measurement of insurance and reinsurance contracts is explained in Note 2.1.

1.1.1.2	2. Changes to presentation and disclosure	IAS 8.28(c)
For pre contra	esentation in the statement of financial position, the Company aggregates insurance and reinsurance cts issued and reinsurance contracts held, respectively and presents separately:	IFRS 17.78
►	Portfolios of insurance and reinsurance contracts issued that are assets	
►	Portfolios of insurance and reinsurance contracts issued that are liabilities	
►	Portfolios of reinsurance contracts held that are assets	
	Portfolios of reinsurance contracts held that are liabilities	

The portfolios referred to above are those established at initial recognition in accordance with the IFRS 17 *IFRS* 17.14-24 requirements.

Portfolios of insurance contracts issued include any assets for insurance acquisition cash flows.

The line item descriptions in the statement of profit or loss and other comprehensive income have been changed significantly compared with last year. Previously, the Company reported the following line items:

- Gross written premiums
- Net written premiums
- Changes in premium reserves
- Gross insurance claims
- Net insurance claims

Instead, IFRS 17 requires separate presentation of:

- Insurance revenue
- Insurance service expenses
- Insurance finance income or expenses
- Income or expenses from reinsurance contracts held

The Company provides disaggregated qualitative and quantitative information about:

- Amounts recognised in its financial statements from insurance contracts
- Significant judgements, and changes in those judgements, when applying the standard

IFRS 17.28A, B, C IFRS 17.B35A

IFRS 17.55(a)(iii)

IFRS 17.80-82

Notes to the Financial Statements

1.1. New and amended standards and interpretations (continued)

1.1.1.3. Transition

On transition date, 1 January 2022, the Company:

- Has identified, recognised and measured each group of insurance contracts as if IFRS 17 had always applied
 IFRS 17.C4
- Has identified, recognised and measured assets for insurance acquisition cash flows as if IFRS 17 has always applied. However no recoverability assessment was performed before the transition date. At transition date, a recoverability assessment was performed and no impairment loss was identified
- Derecognised any existing balances that would not exist had IFRS 17 always applied
- Recognised any resulting net difference in equity

Commentary

commentary	
For the purposes of the transition requirements in IFRS 17, the date of initial application is the beginning of the annual reporting period in which an entity first applies IFRS 17 (i.e., 1 January 2023 for an entity first applying the standard with an annual reporting period ending 31 December 2023). IFRS 17 also refers to the transition date as the beginning of the annual reporting period immediately preceding the date of initial application (i.e., 1 January 2022 for an entity first applying the standard with an annual reporting period ending 31 December 2023).	IFRS 17.C2(a) IFRS 17.C2(b)
IFRS 17.C3(a) states that an entity is not required to present the quantitative information required by paragraph 28(f) of IAS 8 <i>Accounting Policies, Changes in Accounting Estimates and Errors.</i> IAS 8.28(f) requires, for the current period and each prior period presented, disclosure of the amount of the accounting policy change adjustment for each financial statement line item affected, and for basic and diluted earnings per share. No detailed reconciliation is required upon transition to IFRS 17.	IFRS 17.C3(a)
For the purposes of these illustrative disclosures it has been assumed that Good General was able to apply IFRS 17 retrospectively to identify, recognise and measure and calculate assets for insurance acquisition cash flows at the transition date. If this is impracticable for an entity, it could measure the assets for insurance acquisition cash flows using either:	IFRS 17.C5B
(a) Modified retrospective approach	
If the modified retrospective approach is applied for certain groups of contracts, IFRS 17 requires an entity to use the same systematic and rational method expected to be used post transition to allocate any insurance acquisition cash flows paid (or for which a liability has been recognised applying another IFRS standard) before the transition date to groups of insurance contracts recognised at transition date and after the transition date.	IFRS 17.C14A-B
To the extent that an entity does not have reasonable and supportable information to apply a systematic and rational method of allocation, any asset for insurance acquisition cash flows for groups of insurance contracts must be set to nil.	IFRS 17.C14D
(b) Fair value approach	
In applying the fair value approach, the amount of the asset for insurance acquisition cash flows must be determined as the amount of insurance acquisition cash flows that an entity would incur at the transition date to obtain rights to:	IFRS 17.C24A
 (a) Recover insurance acquisition cash flows from premiums of insurance contracts issued before the transition date but not yet recognised at the transition date; 	
(b) Future insurance contracts that are renewals of insurance contracts recognised at the transition date and insurance contracts described in (a); and	
(c) Future insurance contracts, other than those in (b), after the transition date without paying again insurance acquisition cash flows the entity has already paid that are directly attributable to the related portfolio of insurance contracts.	
At the transition date, the standard requires entities to exclude from the measurement of any group of insurance contracts the amount of any asset for insurance acquisition cash flows.	IFRS 17.C24B

1.1.2. IFRS 9 Financial Instruments

IFRS 9 replaced IAS 39 <i>Financial Instruments: Recognition and Measurement</i> for annual periods beginning on or after 1 January 2018. However, the Company elected, under the amendments to IFRS 4, to apply the temporary exemption from IFRS 9, thereby deferring the initial application date of IFRS 9 to align with	IFRS 9.7.1.1
the initial application of IFRS 17.	
The Company has applied IFRS 9 retrospectively and restated comparative information for 2022 for financial instruments in the scope of IFRS 9. Differences arising from the adoption of IFRS 9 were recognised in retained earnings as of 1 January 2022 and are disclosed in Note <u>1.1.3.</u>	IAS 8.28 IFRS 9.7.2.1 IFRS 9.7.2.15
Commentary	IFRS 9.7.2.15
Comparative information for instruments in the scope of IFRS 9 may only be restated if this is possible without the use of hindsight. For the purposes of these illustrative disclosures it has been assumed that Good General Insurance was able to restate comparatives without the use of hindsight.	
As per IFRS 9.7.2.1, IFRS 9 must not be applied to items that have already been derecognised at the date of initial application. As such, if an entity chooses to restate comparatives, IAS 39 must continue to be applied to any items derecognised during the comparative period. For the purposes of these illustrative disclosures, it has been assumed that Good General did not derecognise any IAS 39 assets during 2022. Accordingly, IFRS 9 is applied to all financial instruments for the comparative period.	IFRS 9.7.2.1
If an entity restating comparative information has assets that were disposed of in the comparative period, the entity will apply IAS 39 recognition and measurement requirements to those assets in the comparative period. It will also need to produce the relevant IAS 39 related disclosures for these assets including:	
The IAS 39 accounting for gains/losses and income on such assets in the statement of profit or loss	
 IAS 39 classifications for the restated opening statement of financial position 	
Relevant IAS 39 accounting policies	
Any relevant note disclosures	
For illustrative IAS 39 related disclosures please refer to EY's Good Insurance (2017) publication	

The nature of the changes in accounting policies can be summarised, as follows:

1.1.2.1. Changes to classification and measurement

To determine their classification and measurement category, IFRS 9 requires all financial assets to be assessed based on a combination of the Company's business model for managing the assets and the instruments' contractual cash flow characteristics.	IFRS 9.4.1.1 IFRS 9.4.1.2 IFRS 9.4.1.4
The IAS 39 measurement categories for financial assets (fair value through profit or loss (FVPL), available for sale (AFS), held-to-maturity (HTM) and loans and receivables (L&R) at amortised cost) have been replaced by:	
Financial assets at fair value through profit or loss, including equity instruments and derivatives	
Debt instruments at fair value through other comprehensive income, with gains or losses recycled to profit or loss on derecognition	IFRS 9.4.1.1 IFRS 9.4.1.4
Equity instruments at fair value through other comprehensive income, with no recycling of gains or losses to profit or loss on derecognition (not used by the Company)	IFRS 9.4.1.2A
Debt instruments at amortised cost	IFRS 9.4.1.4
The Company's classification of its financial assets is explained in Note 2.3 . The quantitative impact of applying IFRS 9 as at 1 January 2022 is disclosed in Note $1.1.3$.	IFRS 9.4.1.2

1.1.2.2. Changes to the impairment calculation

The adoption of IFRS 9 has fundamentally changed the Company's accounting for impairment losses for debt instruments held at FVOCI or amortised cost by replacing IAS 39's incurred loss approach with a forward-looking expected credit loss (ECL) approach.

IFRS 9 requires the Company to record an allowance for ECLs for all debt instruments not held at FVPL.

For debt instruments, the ECL is based on the portion of lifetime ECLs (LTECL) that would result from default events on a financial instrument that are possible within 12 months after the reporting date. However, when there has been a significant increase in credit risk since origination or purchase of the assets, the allowance is based on the full LTECL.

The Company's debt instruments at FVOCI and amortised cost comprise quoted bonds that are graded in the top investment category (Very Good and Good) by the Euroland Credit Agency and, therefore, are considered to be low credit risk investments. It is the Company's policy to measure such instruments on a 12-month ECL (12mECL) basis. The Company does, however, consider that there has been a significant increase in credit risk for a previously assessed low credit risk investment when any contractual payments on these instruments are more than 30 days past due. Where the credit risk of any bond deteriorates, the Company will sell the bond and purchase bonds meeting the required investment grade.

The Company considers an instrument to be in default when contractual payments are 90 days past due. However, in certain cases, the Company may also consider an instrument to be in default when internal or external information indicates that the Company is unlikely to receive the outstanding contractual amounts in full. There were no such instances in 2023 or 2022.

The adoption of the ECL requirements of IFRS 9 has resulted in increases in impairment allowances in respect of the Company's debt instruments. The increase in allowance was adjusted to retained earnings.

As it was possible to do so without the use of hindsight, the Company restated the statement of financial position as at 1 January 2022, resulting in decreases in financial assets and retained earnings amounting to €11,000, respectively. The statement of profit or loss for the year ended 31 December 2022 was also restated, resulting in increases in impairment loss on financial assets amounting to €2,000.

Details of the Company's impairment method are disclosed in Note 2.3.6. The quantitative impact of applying IFRS 9 as at 1 January 2022 is disclosed in Note 1.1.3.

1.1.2.3. Changes in disclosure - IFRS 7

To reflect the differences between IFRS 9 and IAS 39, IFRS 7 *Financial Instruments: Disclosures* was also amended. The Company applied the amended disclosure requirements of IFRS 7, together with IFRS 9, for the year beginning 1 January 2023. Changes include transition disclosures as shown in Note <u>1.1.3</u>. Detailed qualitative and quantitative information about the ECL calculations, such as the assumptions and inputs used, are set out in Notes <u>2.3.6.1</u> and <u>5.2.1</u>.

Reconciliations from opening to closing ECL allowances are presented in Notes 3.2.4.4.1 and 3.2.4.4.2.

Commentary

IFRS 7 also requires additional and more detailed disclosures for hedge accounting even for entities opting to continue to apply the hedge accounting requirements of IAS 39.

For the purposes of these illustrative disclosures, it has been assumed that Good General does not hedge account and, as such, these disclosures have not been included.

IFRS 9 5 5 1

IFRS 9.5.5.3

IFRS 9.5.5.5

IFRS 9.Appendix A

IFRS 7.35F(b) IFRS 9.5.5.9 IFRS 9.85.5.37

1.1.3. Transition disclosures - IFRS 9

The following pages set out the impact of adopting IFRS 9 on the statement of financial position, including the effect of replacing IAS 39's incurred credit loss calculations with IFRS 9's ECLs.

A reconciliation between the carrying amounts under IAS 39 and the balances reported under IFRS 9 as of initial application date 1 January 2023 is, as follows:

			1 Janu	ary 2023				
In €000		IAS 39 mea	surement	Re-	Remeasu	rement	IFRS	9
Financial assets	Ref	Category	Amount	classification	ECL	Other	Amount	Category
Cash and balances with banks		$L\&R^1$	1,888	-	-		1,888	AC ²
Debt instruments at amortised cost			N/A	1,001	(2)	(12)	987	AC
From: Financial investments - AFS	A			1,001	(2)	(12)		
		L&R	1,888	1,001	(2)	(12)	2,875	AC
Financial investments - AFS ³			11,689	(11,689)	-		N/A	
To: Debt instruments at FVOCI	В			(10,688)	(61)	61		
To: Debt instruments at amortised cost	А	-		(1,001)	(61)	61		
		AFS	11,689	(11,689)	-	. <u> </u>	N/A	
Debt instruments at fair value through OCI			N/A	10,688			10,688	FVOCI
From: Financial Investments - AFS	В	_		10,688				
		_	N/A	10,688	-		10,688	FVOCI
Financial assets at fair value through profit or loss (designated)	С	FVPL (designated)	5,452	(5,452)	-		-	FVPL (designated)
Financial assets at fair value through profit or loss (mandatory)			N/A	5,452	-		5,452	FVPL (mandatory)
		FVPL	5,452		_		5,452	FVPL
Non-financial assets								
Deferred tax assets	D	=	243		-	(2)	241	
Total assets			19,272	-	(2)	(14)	19,256	

¹ Loans and receivables

² Amortised cost

³ Available for sale

- A As of 1 January 2023, the Company classified a portion of its previous AFS portfolio as debt instruments at amortised cost. These instruments met the solely payments of principal and interest (SPPI) criterion, were not actively traded and were held with the intention to collect cash flows and without the intention to sell. The fair value of these instruments that the Company still held at 31 December 2023 was €1,005,000. The change in fair value over 2023 that would have been recorded in OCI had these instruments continued to be revalued through OCI, is €4,000.
- B As of 1 January 2023, the Company assessed the remainder of its debt instrument portfolio which had previously been classified as AFS debt instruments. The Company concluded that these instruments are managed within a business model of collecting contractual cash flows and selling the financial assets. Accordingly, the Company classified these investments as debt instruments measured at FVOCI.
- C As at 1 January 2023, the Company assessed its assets previously designated at FVPL under IAS 39. Under IFRS 9, the Company classifies all its equity instruments as mandatorily measured at FVPL. In respect of debt instruments previously designated FVPL under IAS 39, upon evaluation, as the Company's business model is to manage this portfolio of instruments on a fair value basis, these assets did not meet the criterion for recognition at amortised cost or FVOCI and as such are mandatorily measured at FVPL.

D The impact of adopting IFRS 9 on deferred tax is set out on the next page and in Note \underline{X} .

Notes to the Financial Statements

1.1. New and amended standards and interpretations (continued)

The following table reconciles the aggregate opening loan loss provision allowances under IAS 39 to the ECL allowances under IFRS 9 at date of initial application. Further details are disclosed in Notes 3.2.4.4.1 and 3.2.4.4.2.

	Loan loss provision under IAS 39		ECLs under IFRS 9 at	IFRS 7.42F
In €000	at 31 December 2022	Re-measurement	1 January 2023	
Impairment allowance for Available-for-sale debt investment securities per IAS 39/Debt instruments at amortised cost under IFRS 9:	_	2	2	
Available-for-sale debt investment securities per IAS 39/debt financial assets at EVOCI under IERS 9	<u> </u>	61	61	
		63	63	

Commentary

On initial application of IFRS 9, entities are required to revisit the FVPL designations previously made in accordance with IAS 39 and are also given an opportunity to make new designations in accordance with IFRS 9. More specifically, on the date of initial application:

- Any previous designation of a financial asset as measured at FVPL may be revoked in any case, but must be revoked if such designation no longer eliminates, or significantly reduces, an accounting mismatch
- A financial asset or a financial liability may be designated as measured at FVPL, if such designation would now eliminate or significantly reduce an accounting mismatch
- Any previous designation of a financial liability as measured at FVPL that was made on the basis that it eliminated or significantly reduced an accounting mismatch may be revoked in any case, but must be revoked if such designation no longer eliminates or significantly reduces an accounting mismatch
- Any investment in a non-derivative equity instrument that meets the definition of equity under IAS 32 and is not held for trading, may be designated as non-recyclable FVOCI. The Company does not make use of this measurement category.

Under IAS 39, in certain circumstances, entities may choose to elect to hold equity instruments at cost. The option to hold such investments at cost is no longer available under IFRS 9. The Company did not elect to use that option in the past.

We specifically draw attention to IFRS 7.42M-N that requires the following disclosures where financial assets are reclassified to amortised cost:

The fair value of the financial asset at the year end and the fair value gains and losses that would have been recognised in profit or loss during the period if the assets had not been reclassified

And when entities reclassify financial assets out of FVPL into FVOCI or amortised cost:

The effective interest rate (EIR) determined on the date of initial application and the recognised interest revenue or expense

We have addressed these disclosures, as relevant, in the narrative part of the transition tables.

For the purposes of these disclosures, we assumed the deferred tax balances can be offset in accordance with the requirements of IAS 12 *Income Taxes*.

IFRS 7 includes disclosure requirements at the date of initial application of IFRS 9 (1 January 2023). As Good General has restated comparative balances effective 1 January 2022, the following additional tables have been included to provide the user with additional information about the transition to IFRS 9 and the adjustments to opening balances of retained earnings and the fair value reserve as at 1 January 2022, in conjunction with the effects of the transition to IFRS 17 on that date.

A reconciliation between the carrying amounts under IAS 39 and the balances reported under IFRS 9 as of 1 January 2022 is, as follows:

IFRS 7.42I IAS 8.28 IAS 1.38

	1 January 2022						
In €000	IAS 39 measurement Re-		Remeasurement		IFRS 9		
Financial assets	Category	Amount	classification	ECL	Other	Amount	Category
Cash and balances with banks	$L\&R^1$	2,700	-	-		2,700	AC ²
Debt instruments at amortised cost		N/A	953	(2)	(11)	940	AC
From: Financial investments - AFS			953	(2)	(11)		
	L&R	2,700	953	(2)	(11)	3,640	AC
Financial investments - AFS ³		10,479	(10,479)	-		N/A	
To: Debt instruments at FVOCI			(9,526)				
To: Debt instruments at amortised cost			(953)				
	AFS	10,479	(10,479)	-		N/A	
Debt instruments at fair value through OCI		N/A	9,526	(59)	59	9,526	FVOCI
From: Financial Investments - AFS			9,526	(59)	59		
		N/A	9,526	-		9,526	FVOCI
Financial assets at fair value through profit or loss (designated)	FVPL (designated)	4,517	(4,517)	-		-	FVPL (designated)
Financial assets at fair value through profit or loss (mandatory)		N/A	4,517	-		4,517	FVPL (mandatory)
	FVPL	4,517	-		<u> </u>	4,517	FVPL
Non-financial assets							
Deferred tax assets		237		-	(2)	235	
Total assets		17,933	-	(2)	(13)	17,918	
¹ Loans and receivables					_		

² Amortised cost

³ Available for sale

The following table reconciles the aggregate opening loan loss provision allowances under IAS 39 to the ECL allowances under IFRS 9 as at date of transition. Further details are disclosed in Notes 3.2.4.4.1 and 3.2.4.4.2.

	Loan loss provision under IAS 39		ECLs under IFRS 9 at	IFRS 7.42
In €000	at 31 December 2021	Re-measurement	1 January 2022	
Impairment allowance for Available-for-sale debt investment securities per IAS 39/Debt instruments at amortised cost under IFRS 9: Available-for-sale debt investment	_	2	2	
securities per IAS 39/debt financial		59	59	
assets at FVOCI under IFRS 9		61	61	
1.1. New and amended standards and interpretations (continued)

The impact of transition to IFRS 9 on reserves and retained earnings is, as follows:

In €000		IAS 1.106(b) IAS 8.28(f)
Fair value reserve		IAS 1.17(c)
Closing balance under IAS 39 (31 December 2021)	114	IAS 1.50
Reclassification of debt instruments from available-for-sale to amortised cost	(11)	
Adjustment for recognition of ECL under IFRS 9 for debt financial assets at FVOCI	59	
Deferred tax in relation to IFRS 9 application	(10)	
— Opening balance under IFRS 9 (1 January 2022)	152	
Retained earnings		
Closing balance under IAS 39 (31 December 2021)	5,298	
Impact of initial application of IFRS 17	(547)	
Deferred tax in relation to IFRS 17 application	109	
Recognition of IFRS 9 ECLs for debt instruments measured at amortised cost and at FVOCI (see above)	(61)	
Deferred tax in relation to IFRS 9 application	8	
Opening balance under IFRS 9 and IFRS 17 (1 January 2022)	4,807	
Total change in equity (after tax) due to the application of new standards		
Fair value reserve	38	
Retained earnings	(53)	
Total change in equity due to the application of IFRS 9	(15)	
Insurance/ reinsurance finance reserve	3	
Retained earnings	(438)	
Total change in equity due to the application of IFRS 17	(435)	

Commentary

The disclosures of the impact of the transition to IFRS 9 on reserves and retained earnings, deferred tax and provisions are not specified by IFRS 9 and IFRS 7. However, providing such disclosures is in line with both IAS 1.106(b) and IAS 8.28(f), which require entities to disclose the effects of retrospective application. IAS 1.17(c) and IAS 1.38 also require entities to provide additional disclosures when otherwise the information would be insufficient to enable users to understand the impact of particular transactions and to assist comparability.

2. Summary of significant accounting policies

2.1. Insurance and reinsurance contracts classification

The Company issues insurance contracts in the normal course of business, under which it accepts significant insurance risk from its policyholders. As a general guideline, the Company determines whether it has significant insurance risk, by comparing benefits payable after an insured event with benefits payable if the insured event did not occur. Insurance contracts can also transfer financial risk. The Company issues non-life insurance to individuals and businesses. Non-life insurance products offered include property, marine, and personal accident. These products offer protection of policyholder's assets and indemnification of other parties that have suffered damage as a result of a policyholder's accident.

The Company also issues reinsurance contracts in the normal course of business to compensate other entities for claims arising from one or more insurance contracts issued by those entities.

The Company does not issue any contracts with direct participating features.

Commentary The definition of an insurance contract in IFRS 17 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 IFRS 17 a specified uncertain future event (the insured event) adversely affects the policyholder'. Appendix A The definition of an insurance contract refers to 'insurance risk' which is defined as 'risk, other than financial risk, transferred from the holder of a contract to the issuer'. This definition determines which contracts are within the scope of IFRS 17 rather than other standards. IFRS 17.BC67 The basic definition of an insurance contract is unchanged from IFRS 4, which means that, in many cases, contracts that were insurance contracts under IFRS 4 are expected to be insurance contracts under IFRS 17. However, there have been clarifications to the related application guidance explaining the definition to require IFRS 17.B20 that: An insurer should consider the time value of money in assessing whether the additional benefits IFRS 17.B19 payable in any scenario are significant A contract does not transfer significant insurance risk if there is no scenario with commercial IFRS 17.B19 substance in which the insurer can suffer a loss on a present value basis If a reinsurance contract does not expose the issuer to the possibility of a significant loss, that contract is still deemed to transfer significant insurance risk, if it transfers to the reinsurer substantially all the insurance risk relating to the reinsured portions of the underlying insurance contracts. This guidance in IFRS 17.B19 is new compared to that contained in IFRS 4 Insurance risk is significant if, and only if, an insured event could cause the issuer to pay additional amounts IFRS 17.B18 that are significant in any single scenario, excluding scenarios that have no commercial substance (i.e., no discernible effect on the economics of the transaction). If an insured event could mean significant additional amounts would be payable in any scenario that has commercial substance, the condition in the previous sentence can be met even if the insured event is extremely unlikely, or even if the expected (i.e., probabilityweighted) present value of the contingent cash flows is a small proportion of the expected present value of the remaining cash flows from the insurance contract. The additional amounts described above are determined on a present value basis. If an insurance contract requires payment when an event with uncertain timing occurs and if the payment is not adjusted for the time IFRS 17.B20 value of money, there may be scenarios in which the present value of the payment increases, even if its nominal value is fixed. No guantitative guidance supports the determination of 'significant' in IFRS 17. This was a deliberate decision IFRS 17.BC78 because the IASB considered that if quantitative quidance was provided, it would create an arbitrary dividing line that would result in different accounting treatments for similar transactions that fall marginally on different sides of that line. This would therefore create opportunities for accounting arbitrage. IFRS 4 contained an illustrative example which implied insured benefits must be greater than 101% of the IFRS 4.IG2.E1.3 benefits payable if the insured event did not occur for there to be insurance risk in an insurance contract. However, no equivalent example has been included in IFRS 17. It is not disputed in the Basis for Conclusions IFRS 17.BC77 that a 10% chance of a 10% loss results in a transfer of significant insurance risk and, indeed, the words 'extremely unlikely' and 'a small proportion' suggests that the IASB envisages that significant insurance risk could exist at a different threshold than a 10% probability of a 10% loss. This lack of a quantitative definition means that insurers must apply their own judgement as to what constitutes significant insurance risk. Although the IASB did not want to create an 'arbitrary dividing line', the practical impact of this lack of guidance is that insurers have to apply their own criteria to what constitutes significant insurance risk. As such, there will likely, be inconsistency in practice as to what these dividing lines

are, at least at the margins.

2.1. Insurance and reinsurance contracts classification (continued)

There is no specific requirement under IFRS 17 for insurers to disclose any thresholds used in determining whether a contract contains significant insurance risk. However, IFRS 17 requires an entity to disclose the significant judgements made in applying IFRS 17, whilst IAS 1 *Presentation of Financial Statements* requires an entity to disclose the judgements that management has made in the process of applying the entity's accounting policies that have the most significant effect on the amounts recognised in the financial statements.

IFRS 17 requires the assessment of whether a contract transfers significant insurance risk to be made only once (unless the terms of the contract are modified). The Basis for Conclusions states that this assessment is made at inception.

As the assessment of significant insurance risk is made only once, a contract that qualifies as an insurance contract remains an insurance contract until all rights and obligations are extinguished (i.e., discharged, cancelled or expired), unless the contract is derecognised because of a modification.

2.2. Insurance and reinsurance contracts accounting treatment

2.2.1. Separating components from insurance and reinsurance contracts

The Company assesses its non-life insurance and reinsurance products to determine whether they contain distinct components which must be accounted for under another IFRS instead of under IFRS 17. After separating any distinct components, the Company applies IFRS 17 to all remaining components of the (host) insurance contract. Currently, the Company's products do not include any distinct components that require separation.

Some reinsurance contracts issued contain profit commission arrangements. Under these arrangements, there is a minimum guaranteed amount that the policyholder will always receive - either in the form of profit commission, or as claims, or another contractual payment irrespective of the insured event happening. The minimum guaranteed amounts have been assessed to be highly interrelated with the insurance component of the reinsurance contacts and are, therefore, non-distinct investment components which are not accounted for separately. However, receipts and payments of these investment components are recognised outside of profit or loss.

2.2.2. Level of aggregation

IFRS 17 requires a company to determine the level of aggregation for applying its requirements. The Company previously applied aggregation levels under Euroland GAAP, which were significantly higher than the level of aggregation required by IFRS 17. The level of aggregation for the Company is determined firstly by dividing the business written into portfolios. Portfolios comprise groups of contracts with similar risks which are managed together. Portfolios are further divided based on expected profitability at inception into three categories: onerous contracts, contracts with no significant risk of becoming onerous, and the remainder. This means that, for determining the level of aggregation, the Company makes an evaluation of whether a series of contracts need to be treated together as one unit based on reasonable and supportable information, or whether a single contract contains components that need to be separated and treated as if they were stand-alone contracts. As such, what is treated as a contract for accounting purposes may differ from what is considered as a contract for accounting purposes may differ from what is considered as a contract for accounting purposes may contain contracts issued more than one year apart.

The Company has elected to group together those contracts that would fall into different groups only because IFRS 17.14 law or regulation specifically constrains its practical ability to set a different price or level of benefits for policyholders with different characteristics.

The Company applied a full retrospective approach for transition to IFRS 17. The portfolios are further divided *IFRS* 17.126, by year of issue and profitability for recognition and measurement purposes. Hence, within each year of issue, *IFRS* 17.20 portfolios of contracts are divided into three groups, as follows:

- A group of contracts that are onerous at initial recognition (if any)
- A group of contracts that, at initial recognition, have no significant possibility of becoming onerous subsequently (if any)
- A group of the remaining contracts in the portfolio (if any)

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2.2. Insurance and reinsurance contracts accounting treatment (continued)

The pro existing recogn Compa subseq conside	ofitability of groups of contracts is assessed by actuarial valuation models that take into consideration g and new business. The Company assumes that no contracts in the portfolio are onerous at initial ition unless facts and circumstances indicate otherwise. For contracts that are not onerous, the ny assesses, at initial recognition, that there is no significant possibility of becoming onerous uently by assessing the likelihood of changes in applicable facts and circumstances. The Company ers facts and circumstances to identify whether a group of contracts are onerous based on:	IFRS 17.18
> >	Pricing information Results of similar contracts it has recognised Environmental factors, e.g., a change in market experience or regulations	
The Co except recogn	mpany divides portfolios of reinsurance contracts held applying the same principles set out above, that the references to onerous contracts refer to contracts on which there is a net gain on initial ition. For some groups of reinsurance contracts held, a group can comprise a single contract.	
2.2.3.	Recognition	
The Co	mpany recognises groups of insurance contracts it issues from the earliest of the following:	IFRS 17.25
•	The beginning of the coverage period of the group of contracts The date when the first payment from a policyholder in the group is due or when the first payment is received if there is no due date	
►	For a group of onerous contracts, if facts and circumstances indicate that the group is onerous	
The Co followir	mpany recognises a group of reinsurance contracts held it has entered into from the earlier of the ng:	
Þ	The beginning of the coverage period of the group of reinsurance contracts held. (However, the Company delays the recognition of a group of reinsurance contracts held that provide proportionate coverage until the date any underlying insurance contract is initially recognised, if that date is later than the beginning of the coverage period of the group of reinsurance contracts held.	IFRS 17.62, IFRS 17.62A
And		
•	The date the Company recognises an onerous group of underlying insurance contracts if the Company entered into the related reinsurance contract held in the group of reinsurance contracts held at or before that date.	
The Co criteria	mpany adds new contracts to the group in the reporting period in which that contract meets one of the set out above.	IFRS 17.28
Comme	entary:	
The iss typicall recogn contrac contrac reinsur after th 'other-t timing	ue date of a contract is when an entity has a contractual obligation to accept risk. The issue date is y before the beginning of coverage and due date for the initial premium. However, IFRS 17 only requires ition of issued insurance contracts before these dates if facts and circumstances indicate that the ets in the group to which the PAA applies are onerous. The recognition requirements for reinsurance ets held that provide proportionate coverage are intended to simplify recognition for proportionate ance contracts held. Circumstances in which the first underlying attaching contract is issued, shortly be reinsurance contracts are written, will result in similar timing of recognition for proportionate and chan-proportionate' reinsurance contracts. In other cases, there may be a greater difference in the of recognition.	IFRS 17.BC 140-145

2.2. Insurance and reinsurance contracts accounting treatment (continued)

2.2.4. Contract boundary

The Company includes in the measurement of a group of insurance contracts all the future cash flows within the boundary of each contract in the group. Cash flows are within the boundary of an insurance contract if they arise from substantive rights and obligations that exist during the reporting period in which the Company can compel the policyholder to pay the premiums, or in which the Company has a substantive obligation to provide the policyholder with insurance contract services. A substantive obligation to provide insurance contract services ends when:

The Company has the practical ability to reassess the risks of the particular policyholder and, as a result, can set a price or level of benefits that fully reflects those risks

Or

- Both of the following criteria are satisfied:
- The Company has the practical ability to reassess the risks of the portfolio of insurance contracts that contain the contract and, as a result, can set a price or level of benefits that fully reflects the risk of IFRS 17.B64 that portfolio
- The pricing of the premiums up to the date when the risks are reassessed does not take into account the risks that relate to periods after the reassessment date

A liability or asset relating to expected premiums or claims outside the boundary of the insurance contract is not recognised. Such amounts relate to future insurance contracts.

2.2. Insurance and reinsurance contracts accounting treatment (continued)

2.2.5. Measurement - Premium Allocation Approach

	IFRS 17 Options	Adopted approach	
Premium Allocation Approach (PAA) Eligibility	Subject to specified criteria, the PAA can be adopted as a simplified approach to the IFRS 17 general model	Coverage period for property insurance and liability reinsurance assumed is one year or less and so qualifies automatically for PAA. Both marine insurance and personal accident insurance include contracts with coverage period greater than one year. However, there is no material difference in the measurement of the liability for remaining coverage between PAA and the general model, therefore, these qualify for PAA.	IFRS 17.53
Insurance acquisition cash flows for insurance contracts issued	Where the coverage period of all contracts within a group is not longer than one year, insurance acquisition cash flows can either be expensed as incurred, or allocated, using a systematic and rational method, to groups of insurance contracts (including future groups containing insurance contracts that are expected to arise from renewals) and then amortised over the coverage period of the related group. For groups containing contracts longer than one year, insurance acquisition cash flows must be allocated to related groups of insurance contracts and amortised over the coverage period of the related group.	For one-year property business, insurance acquisition cash flows are expensed as incurred. For all other business, insurance acquisition cash flows are allocated to related groups of insurance contracts and amortised over the coverage period of the related group.	IFRS 17. 59 (a) IFRS 17.28A, IFRS 17.B35A
Liability for Remaining Coverage (LFRC), adjusted for financial risk and time value of money	Where there is no significant financing component in relation to the LFRC, or where the time between providing each part of the services and the related premium due date is no more than a year, an entity is not required to make an adjustment for accretion of interest on the LFRC.	For marine and personal accident insurance, an allowance is made for accretion of interest on the LFRC. For all other business, there is no allowance as the premiums are received within one year of the coverage period.	- IFRS 17.56
Liability for Incurred Claims, (LFIC) adjusted for time value of money	Where claims are expected to be paid within a year of the date that the claim is incurred, it is not required to adjust these amounts for the time value of money.	For some claims within the property product line, the incurred claims are expected to be paid out in less than one year. Hence, no adjustment is made for the time value of money. For all other business, the LFIC is adjusted for the time value of money.	- IFK3 17.39 (b)
Insurance finance income and expense	There is an option to disaggregate part of the movement in LFIC resulting from changes in discount rates and present this in OCI.	For the personal accident product line, the impact on LFIC of changes in discount rates will be captured within OCI, in line with the accounting for assets backing this product line. For all other business, the change in LFIC as a result of changes in discount rates will be captured within profit or loss.	IFRS 17.88

Commentary

The PAA provides entities with a number of accounting policy choices which have been presented above in a tabular format. As shown above, the Company has made an election for each of the five accounting policy choices available in respect of the PAA approach, as appropriate to the circumstances of the Company. In such cases, the commentary provides details of which policy has been selected, the reasons for this policy selection, and summarises the difference in the disclosure requirements. While it is not expected that entities will necessarily take a similar approach in practice, the Company has elected different accounting policy choices for its insurance product lines to demonstrate disclosures related to the options available under the PAA.

These are accounting policy choices made in accordance with IAS 8, unless indicated otherwise by IFRS 17.

2.2. Insurance and reinsurance contracts accounting treatment (continued)

2.2.5.1. Insurance contracts - initial measurement

IFRS 17.53 (a),(b), IFRS 17.97(a) IFRS 17.69
IFRS 17.55
IFRS 17.54
IFRS 17.54(a) IFRS 17.54(b)
IFRS 17.97(c)
IFRS 17.55(a)
IFRS 17.B66A
IFRS 17.69

For marine and personal accident insurance, the liability for remaining coverage is discounted to reflect the time value of money and the effect of financial risk. For all other business, there is no allowance for time value of money as the premiums are received within one year of the coverage period.

Where facts and circumstances indicate that contracts are onerous at initial recognition, the Company performs additional analysis to determine if a net outflow is expected from the contract. Such onerous contracts are separately grouped from other contracts and the Company recognises a loss in profit or loss for the net outflow, resulting in the carrying amount of the liability for the group being equal to the fulfilment cash flows. A loss component is established by the Company for the liability for remaining coverage for such onerous group depicting the losses recognised. For additional disclosures on the loss component, please refer to Note 2.2.6.2.

Commentary:

IFRS 17.59(b) does not require an entity to adjust future cash flows for the time value of money and the effect of financial risk if those cash flows are expected to be paid or received in one year or less from the date the claims are incurred. Nevertheless, an entity may choose to adjust future cash flows for various reasons, for example, to apply the same calculation without a necessity to analyse time period between the claims incurred and an expected date of payment.

2.2. Insurance and reinsurance contracts accounting treatment (continued)

2.2.5.2. Reinsurance contracts held - initial measurement

The Company measures its reinsurance assets for a group of reinsurance contracts that it holds on the same basis as insurance contracts that it issues. However, they are adapted to reflect the features of reinsurance contracts held that differ from insurance contracts issued, for example the generation of expenses or reduction in expenses rather than revenue.

Where the Company recognises a loss on initial recognition of an onerous group of underlying insurance contracts or when further onerous underlying insurance contracts are added to a group, the Company establishes a loss-recovery component of the asset for remaining coverage for a group of reinsurance contracts held depicting the recovery of losses.

The Company calculates the loss-recovery component by multiplying the loss recognised on the underlying insurance contracts and the percentage of claims on the underlying insurance contracts the Company expects to recover from the group of reinsurance contracts held. The Company uses a systematic and rational method to determine the portion of losses recognised on the group to insurance contracts covered by the group of reinsurance contracts held where some contracts in the underlying group are not covered by the group of reinsurance contracts held.

The loss-recovery component adjusts the carrying amount of the asset for remaining coverage.

Commentary:

A loss recovery component is recognised when an entity recognises a loss on initial recognition of an onerous group of underlying insurance contracts or on the addition of onerous underlying contracts to a group, if and only if the reinsurance contract held is entered into before or at the same time as the onerous underlying insurance contracts are recognised.

2.2.5.3. Insurance contracts - subsequent measurement

The Company measures the carrying amount of the liability for remaining coverage at the end of each reporting IFRS 17.55 (b) period as the liability for remaining coverage at the beginning of the period:

- ⊾ Plus premiums received in the period
- ► Minus insurance acquisition cash flows, with the exception of property insurance product line for which the Company chooses to expense insurance acquisition cash flows as they occur (please see Note 2.2.5.1)
- Plus any amounts relating to the amortisation of the insurance acquisition cash flows recognised as an ► expense in the reporting period for the group
- ► Plus any adjustment to the financing component, where applicable
- ► Minus the amount recognised as insurance revenue for the services provided in the period
- ► Minus any investment component paid or transferred to the liability for incurred claims

The Company estimates the liability for incurred claims as the fulfilment cash flows related to incurred claims. The fulfilment cash flows incorporate, in an unbiased way, all reasonable and supportable information available IFRS 17.59 (b). IFRS without undue cost or effort about the amount, timing and uncertainty of those future cash flows, they reflect current estimates from the perspective of the Company, and include an explicit adjustment for non-financial risk (the risk adjustment). The Company does not adjust the future cash flows for the time value of money and the effect of financial risk for the measurement of liability for incurred claims that are expected to be paid within one year of being incurred.

Where, during the coverage period, facts and circumstances indicate that a group of insurance contracts is onerous, the Company recognises a loss in profit or loss for the net outflow, resulting in the carrying amount of the liability for the group being equal to the fulfilment cash flows. A loss component is established by the Company for the liability for remaining coverage for such onerous group depicting the losses recognised. For additional disclosures on the loss component, please refer to Note 2.2.6.2.

Insurance acquisition cash flows are allocated on a straight-line basis as a portion of premium to profit or loss (through insurance revenue).

17.97(b)

IFRS 17.66A, B, IFRS 17.70A

IFRS 17.B119D IFRS 17.B119E

IFRS 17.70A

IFRS 17.B119C, IFRS

17.66A

2.2. Insurance and reinsurance contracts accounting treatment (continued)

2.2.5.4. Reinsurance contracts held - subsequent measurement

The subsequent measurement of reinsurance contracts held follows the same principles as those for insurance
contracts issued and has been adapted to reflect the specific features of reinsurance held.IFRS 17.66A, IFRS
17.70AWhere the Company has established a loss-recovery component, the Company subsequently reduces the loss-
recovery component to zero in line with reductions in the onerous group of underlying insurance contracts inIFRS 17.66A, IFRS
17.70A

recovery component to zero in line with reductions in the onerous group of underlying insurance contracts in order to reflect that the loss-recovery component shall not exceed the portion of the carrying amount of the loss component of the onerous group of underlying insurance contracts that the entity expects to recover from the group of reinsurance contracts held.

Commentary

The standard does not include guidance on the subsequent treatment of a loss-recovery component that was recognised at initial recognition of a group of underlying insurance contracts.

Per IFRS 17 paragraph B119F, the carrying amount of the loss-recovery component shall not exceed the portion of the carrying amount of the loss component of the onerous group of underlying insurance contracts that an entity expects to recover from the group of reinsurance contracts held and thus should be nil when loss component of the onerous group of underlying insurance contracts is nil. On this basis, the loss-recovery component recognised at initial recognition should be reduced to zero in line with reductions in the onerous group of underlying insurance contracts.

2.2.5.5. Insurance acquisition cash flows

Insurance acquisition cash flows arise from the costs of selling, underwriting and starting a group of insurance	IFRS 17 Appendix A
contracts (issued or expected to be issued) that are directly attributable to the portfolio of insurance contracts	
to which the group belongs.	IFRS 17 284

With the exception of the property insurance product line, for which the Company chooses to expense insurance IFRS 17.B35A acquisition cash flows as they occur, the Company uses a systematic and rational method to allocate:

(a) Insurance acquisition cash flows that are directly attributable to a group of insurance contracts:

- (i) to that group; and
- (ii) to groups that include insurance contracts that are expected to arise from the renewals of the insurance contracts in that group.

(b) Insurance acquisition cash flows directly attributable to a portfolio of insurance contracts that are not directly attributable to a group of contracts, to groups in the portfolio.

Where insurance acquisition cash flows have been paid or incurred before the related group of insurance contracts is recognised in the statement of financial position, a separate asset for insurance acquisition cash flows is recognised for each related group.			
The asset for insurance acquisition cash flow is derecognised from the statement of financial position when the	IFRS 17.28C		

The asset for insurance acquisition cash flow is derecognised from the statement of financial position when the IFRS 17.2 insurance acquisition cash flows are included in the initial measurement of the related group of insurance contracts. The time bands when the Company expects to derecognise the above asset for insurance acquisition cash flows are disclosed in Note <u>11</u>.

At the end of each reporting period, the Company revises amounts of insurance acquisition cash flows allocated to groups of insurance contracts not yet recognised, to reflect changes in assumptions related to the method of allocation used.

After any re-allocation, the Company assesses the recoverability of the asset for insurance acquisition cash flows, if facts and circumstances indicate the asset may be impaired. When assessing the recoverability, the Company applies:

- An impairment test at the level of an existing or future group of insurance contracts; and
- An additional impairment test specifically covering the insurance acquisition cash flows allocated to expected future contract renewals.

If an impairment loss is recognised, the carrying amount of the asset is adjusted and an impairment loss is recognised in profit or loss.

IFRS 17.28F

The Company recognises in profit or loss a reversal of some or all of an impairment loss previously recognised and increases the carrying amount of the asset, to the extent that the impairment conditions no longer exist or have improved.

2.2. Insurance and reinsurance contracts accounting treatment (continued)

2.2.5.6. Insurance contracts - modification and derecognition

The Company derecognises insurance contracts when:

IFRS 17.B25 ► The rights and obligations relating to the contract are extinguished (i.e., discharged, cancelled or IFRS 17.74 expired) Or IFRS 17.72 ► The contract is modified such that the modification results in a change in the measurement model or the applicable standard for measuring a component of the contract, substantially changes the contract boundary, or requires the modified contract to be included in a different group. In such cases, the Company derecognises the initial contract and recognises the modified contract as a new contract When a modification is not treated as a derecognition, the Company recognises amounts paid or received for the modification with the contract as an adjustment to the relevant liability for remaining coverage. 2.2.6. Presentation The Company has presented separately, in the statement of financial position, the carrying amount of portfolios IFRS 17.78 of insurance contracts issued that are assets, portfolios of insurance contracts issued that are liabilities, portfolios of reinsurance contracts held that are assets and portfolios of reinsurance contracts held that are IFRS 17.79 liabilities. Any assets for insurance acquisition cash flows recognised before the corresponding insurance contracts are included in the carrying amount of the related groups of insurance contracts are allocated to the carrying amount of the portfolios of insurance contracts that they relate to. IFRS 17 80 The Company disaggregates the total amount recognised in the statement of profit or loss and other comprehensive income into an insurance service result, comprising insurance revenue and insurance service expense, and insurance finance income or expenses. IFRS 17.81 The Company does not disaggregate the change in risk adjustment for non-financial risk between a financial and non-financial portion and includes the entire change as part of the insurance service result. IFRS 17.82 The Company separately presents income or expenses from reinsurance contracts held from the expenses or income from insurance contracts issued. 2.2.6.1. Insurance revenue The insurance revenue for the period is the amount of expected premium receipts (excluding any investment component) allocated to the period. The Company allocates the expected premium receipts to each period of insurance contract services on the basis of the passage of time. But if the expected pattern of release of risk IFRS 17.B126 during the coverage period differs significantly from the passage of time, then the allocation is made on the basis of the expected timing of incurred insurance service expenses. The Company changes the basis of allocation between the two methods above as necessary, if facts and IFRS 17.B127 circumstances change. The change is accounted for prospectively as a change in accounting estimate.

For the periods presented, all revenue has been recognised on the basis of the passage of time.

2.2.6.2. Loss components

The Company assumes that no contracts are onerous at initial recognition unless facts and circumstances *IFRS* 17.18 indicate otherwise. Where this is not the case, and if at any time during the coverage period, the facts and *IFRS* 17.57 circumstances mentioned in Note 2.2.2 indicate that a group of insurance contracts is onerous, the Company establishes a loss component as the excess of the fulfilment cash flows that relate to the remaining coverage of the group over the carrying amount of the liability for remaining coverage of the group as determined in Note 2.2.5.3. Accordingly, by the end of the coverage period of the group of contracts the loss component will be zero.

2.2. Insurance and reinsurance contracts accounting treatment (continued)

Commentary

When entities apply the premium allocation approach for a group of contracts which is assessed as onerous, then a loss component should be established as per the calculation in IFRS 17.57. Given the simplified nature of the premium allocation approach, entities could also consider using practical applications that would achieve the same accounting outcome as if IFRS 17.57 were applied.

2.2.6.3. Loss-recovery components

As described in Note 2.2.5.2 above, where the Company recognises a loss on initial recognition of an onerous group of underlying insurance contracts, or when further onerous underlying insurance contracts are added to a group, the Company establishes a loss-recovery component of the asset for remaining coverage for a group of reinsurance contracts held depicting the expected recovery of the losses.

A loss-recovery component is subsequently reduced to zero in line with reductions in the onerous group of underlying insurance contracts in order to reflect that the loss-recovery component shall not exceed the portion ^{IFRS 17.B119F} of the carrying amount of the loss component of the onerous group of underlying insurance contracts that the entity expects to recover from the group of reinsurance contracts held.

2.2.6.4. Insurance finance income and expense

Insurance finance income or expenses comprise the change in the carrying amount of the group of insurance *IFRS 17.87* contracts arising from:

- The effect of the time value of money and changes in the time value of money; and
- The effect of financial risk and changes in financial risk.

The Company disaggregates insurance finance income or expenses on insurance contracts issued for its personal accident product line between profit or loss and OCI. The impact of changes in market interest rates on the value of the insurance assets and liabilities are reflected in OCI in order to minimise accounting mismatches between the accounting for financial assets and insurance assets and liabilities. The Company's financial assets backing the personal accident insurance portfolios are predominantly measured FVOCI. For all other business, the Company does not disaggregate finance income and expenses because the related financial assets are managed on a fair value basis and measured at FVPL.

2.2.6.5. Net income or expense from reinsurance contracts held

The Company presents separately on the face of the statement of profit or loss and other comprehensive IFRS 17.86 income, the amounts expected to be recovered from reinsurers, and an allocation of the reinsurance premiums paid. The Company treats reinsurance cash flows that are contingent on claims on the underlying contracts as part of the claims that are expected to be reimbursed under the reinsurance contract held, and excludes investment components and commissions from an allocation of reinsurance premiums presented on the face of the statement of profit or loss and other comprehensive income.

2.3. Financial assets

Commentary

For the purposes of these illustrative financial statements, it has been assumed that the Company has portfolios of non-complex, low risk financial assets. The following illustrative disclosures are considered appropriate for the Company. Entities will need to ensure that their disclosures are specific to their individual circumstances and address the nature and terms of all relevant financial assets and liabilities held by an entity. 2.3.1. Initial recognition The classification of financial instruments at initial recognition depends on their contractual terms and the IFRS 9 5 1 1 business model for managing the instruments, as described in Notes 2.3.2.1.1 and 2.3.2.1.2. Financial instruments are initially recognised on the trade date measured at their fair value (as defined in IFRS 9.5.1.1A Note X). Except for financial assets and financial liabilities recorded at FVPL, transaction costs are added to this amount. 2.3.2. Measurement categories IFRS 9.4.1.1 The Company classifies all of its financial assets based on the business model for managing the assets and the asset's contractual terms. The categories include the following: Amortised cost, as explained in Note 2.3.2.1 ► ▶ FVOCI, as explained in Note 2.3.2.2 ► FVPL, as explained in Note 2.3.2.3 2.3.2.1. Debt instruments measured at amortised cost Debt instruments are held at amortised cost if both of the following conditions are met: IFRS 9 4 1 2A The instruments are held within a business model with the objective of holding the instrument to collect the contractual cash flows The contractual terms of the debt instrument give rise on specified dates to cash flows that are solely payments of principal and interest (SPPI) on the principal amount outstanding The details of these conditions are outlined below. 2.3.2.1.1. Business model assessment The Company determines its business model at the level that best reflects how it manages groups of financial IFRS 9.B4.1.2 assets to achieve its business objective. The Company holds financial assets to generate returns and provide a capital base to provide for settlement of claims as they arise. The Company considers the timing, amount and volatility of cash flow requirements to support insurance liability portfolios in determining the business model for the assets as well as the potential to maximise return for shareholders and future business development. The Company's business model is not assessed on an instrument-by-instrument basis, but at a higher level of IFRS 9.B4.1.2B aggregated portfolios that is based on observable factors such as: ► How the performance of the business model and the financial assets held within that business model are evaluated and reported to the Company's key management personnel ► The risks that affect the performance of the business model (and the financial assets held within that business model) and, in particular, the way those risks are managed ► How managers of the business are compensated (for example, whether the compensation is based on the fair value of the assets managed or on the contractual cash flows collected) ► The expected frequency, value and timing of asset sales are also important aspects of the Company's assessment

The business model assessment is based on reasonably expected scenarios without taking 'worst case' or 'stress *IFRS 9.B4.1.2A* case' scenarios into account. If cash flows after initial recognition are realised in a way that is different from the Company's original expectations, the Company does not change the classification of the remaining financial assets held in that business model, but incorporates such information when assessing newly originated or newly purchased financial assets going forward.

2.3 Financial assets (continued)

2.3.2.1.2. The SPPI test

۷	5.2.1.2. The SPFT lest	
As the	a second step of its classification process the Company assesses the contractual terms to identify whether ey meet the SPPI test.	IFRS 9.4.1.2
'Pr an am	incipal' for the purpose of this test is defined as the fair value of the financial asset at initial recognition d may change over the life of the financial asset (for example, if there are repayments of principal or nortisation of the premium/discount).	IFRS 9.4.1.3 IFRS 9. B4.1.7B
Th the co foi	e most significant elements of interest within a debt arrangement are typically the consideration for e time value of money and credit risk. To make the SPPI assessment, the Company applies judgement and nsiders relevant factors such as the currency in which the financial asset is denominated, and the period r which the interest rate is set.	IFRS 9.4.1.3(b) IFRS 9.B4.1.9A
2.	3.2.2. Debt instruments measured at fair value through other comprehensive income	
Th the	e Company applies the new category under IFRS 9 for debt instruments measured at FVOCI when both of e following conditions are met:	IFRS 9.4.1.2A
	The instrument is held within a business model, the objective of which is both collecting contractual cash flows and selling financial assets	
	The contractual terms of the financial asset meet the SPPI test	
Th un ca co	ese instruments largely comprise debt instruments that had previously been classified as available-for-sale der IAS 39. Debt instruments in this category are those that are intended to be held to collect contractual sh flows and which may be sold in response to needs for liquidity or in response to changes in market nditions.	
2.	3.2.3. Financial assets measured at fair value through profit or loss	
Fir de un ar co	nancial assets in this category are those that are managed in a fair value business model, or that have been signated by management upon initial recognition, or are mandatorily required to be measured at fair value der IFRS 9. This category includes debt instruments whose cash flow characteristics fail the SPPI criterion or e not held within a business model whose objective is either to collect contractual cash flows, or both to collect ntractual cash flows and sell.	IFRS 9.4.1.5
2.	3.3. Subsequent measurement	
2.	3.3.1. Debt instruments at amortised cost	
Af (El or sta	ter initial measurement, debt instruments are measured at amortised cost, using the effective interest rate IR) method, less allowance for impairment. Amortised cost is calculated by taking into account any discount premium on acquisition and fee or costs that are an integral part of the EIR. ECLs are recognised in the atement of profit or loss when the investments are impaired.	IFRS 9.5.4.1 IFRS 9.5.4.2
2.	3.3.2. Debt instruments at fair value through other comprehensive income	
FV in los ca on de	OCI debt instruments are subsequently measured at fair value with gains and losses arising due to changes fair value recognised in OCI. Interest income and foreign exchange gains and losses are recognised in profit or as in the same manner as for financial assets measured at amortised cost as explained in Note 2.4.1. The ECL location for debt instruments at FVOCI is explained in Note 2.3.6.2. Where the Company holds more than e investment in the same security, they are deemed to be disposed of on a first-in first-out basis. On recognition, cumulative gains or losses previously recognised in OCI are reclassified from OCI to profit or loss.	IFRS 9.5.7.10-11
2.	3.3.3. Financial assets at fair value through profit or loss	
Fir va re me	nancial assets at FVPL are recorded in the statement of financial position at fair value. Changes in fair lue are recorded in profit or loss. Interest earned on assets mandatorily required to be measured at FVPL is corded using contractual interest rate, as explained in Note <u>2.4.2.</u> Dividend income from equity instruments easured at FVPL is recorded in profit or loss as other operating income when the right to the payment has	IFRS 9.5.2.1 IFRS 9.5.7.1 IFRS 9.5.7.1A IFRS 7.B5(e)

been established.

2.3 Financial assets (continued)

2.3.4. Reclassification of financial assets and liabilities

The Company does not reclassify its financial assets subsequent to their initial recognition, apart from the exceptional circumstances in which the Company acquires, disposes of, or terminates a business line.							
2.3.5. Derecognition							
2.3.5.1	. Derecognition other than for substantial modification						
A finano is derec	cial asset (or, where applicable, a part of a financial asset or part of a group of similar financial assets) ognised when:	IFRS 9.3.2.2					
►	The rights to receive cash flows from the asset have expired	IFRS 9.3.2.3(a)					
Or							
The Company has transferred its right to receive cash flows from the asset or has assumed an obligation to pay the received cash flows in full without material delay to a third party under a 'pass-through' arrangement; and either: (a) the Company has transferred substantially all the risks and rewards of the asset; or (b) the Company has neither transferred nor retained substantially all the risks and rewards of the asset, but has transferred control of the asset							
The Cor the asso imposin	npany considers control to be transferred if and only if, the transferee has the practical ability to sell et in its entirety to an unrelated third party and is able to exercise that ability unilaterally and without g additional restrictions on the transfer.	IFRS 9.3.2.9					
When the retained continut asset and Compar	ne Company has neither transferred nor retained substantially all of the risks and rewards and has d control of the asset, the asset continues to be recognised only to the extent of the Company's ing involvement, in which case, the Company also recognises an associated liability. The transferred nd the associated liability are measured on a basis that reflects the rights and obligations that the ny has retained.	IFRS 9.3.2.15					
Continu of the o require	ing involvement that takes the form of a guarantee over the transferred asset is measured at the lower riginal carrying amount of the asset and the maximum amount of consideration the Company could be d to pay.	IFRS 9.3.2.16(a)					
2.3.5.2	. Derecognition due to substantial modification of terms and conditions						
The Cor the exte gain or Stage 1	npany derecognises a financial asset when the terms and conditions have been renegotiated to ent that, substantially, it becomes a new instrument, with the difference recognised as a derecognition loss. In the case of debt instruments at amortised cost, the newly recognised loans are classified as for ECL measurement purposes.	IFRS 9.5.4.3 IFRS 9.B5.5.25-26					
When a the follo	ssessing whether or not to derecognise an instrument, amongst others, the Company considers owing factors:						
►	Change in currency of the debt instrument						
►	Introduction of an equity feature						
►	Change in counterparty						
►	If the modification is such that the instrument would no longer meet the SPPI criterion						
If the m result ir a modif	odification does not result in cash flows that are substantially different, the modification does not n derecognition. Based on the change in cash flows discounted at the original EIR, the Company records ication gain or loss.	IFRS 9.5.4.3					

2.3 Financial assets (continued)

2.3.6. Impairment of financial assets

Further disclosures relating to impairment of financial assets are also provided in the following notes:

- Impairment losses on financial instruments Note 3.2.4.4
- ► Disclosures for significant judgements and estimates - Note 5.2.1

The Company recognises an allowance for ECLs for all debt instruments not held at fair value through profit or loss. ECLs are based on the difference between the contractual cash flows due in accordance with the contract and all the cash flows that the Company expects to receive, discounted at the appropriate effective interest rate.

ECLs are recognised in two stages. For credit exposures for which there has not been a significant increase in credit risk since initial recognition, ECLs are provided for credit losses that result from default events that are possible within the next 12-months (12-month ECL). For those credit exposures for which there has been a significant increase in credit risk since initial recognition, a loss allowance is required for credit losses expected over the remaining life of the exposure, irrespective of the timing of the default (a lifetime ECL).

The Company's debt instruments comprise solely of quoted bonds that are graded in the top investment category (Very Good and Good) by the Euroland Credit Agency and, therefore, are considered to be low credit risk investments. It is the Company's policy to measure ECLs on such instruments on a 12-month basis. Where the credit risk of any bond deteriorates, the Company will sell the bond and purchase bonds meeting the required investment grade.

The Company considers a financial asset to be in default (credit impaired) when contractual payments are IFRS 9.5.5.9 90 days past due. However, in certain cases, the Company may also consider a financial asset to be in default when internal or external information indicates that the Company is unlikely to receive the outstanding contractual amounts. A financial asset is written off when there is no reasonable expectation of recovering the contractual cash flows.

2.3.6.1. The calculation of ECLs

The Company calculates ECLs based on scenarios to measure the expected cash shortfalls, discounted at an appropriate EIR. A cash shortfall is the difference between the cash flows that are due to the Company in accordance with the contract and the cash flows that the entity expects to receive.

When estimating the ECLs, the Company considers four scenarios (a base case, an upside, a mild downside and a more extreme downside). When relevant, the assessment of multiple scenarios also incorporates the probability that the defaulted loans will cure.

The mechanics of the ECL calculations are outlined below and the key elements are, as follows:

•	PD	The <i>Probability</i> of <i>Default</i> is an estimate of the likelihood of default over a given time horizon. It is estimated with consideration of economic scenarios and forward-looking information.	IFRS 9.5.5.17 IFRS 9.B5.5.28
•	EAD	The <i>Exposure at Default</i> is an estimate of the exposure at a future default date, taking into account expected changes in the exposure after the reporting date, including repayments of principal and interest, whether scheduled by contract or otherwise, and accrued interest from missed payments.	
•	LGD	The Loss Given Default is an estimate of the loss arising in the case where a default occurs at a given time. It is based on the difference between the contractual cash flows due and those that the Company would expect to receive. It is usually expressed as a percentage of the EAD.	

IFRS 9 5 5 1

IFRS 9 5 5 1

IFRS 9.5.5.3

IFRS 9.5.5.5

IFRS 7.35F(a)

IFRS 7.35G(a)(ii)

IFRS 9.B5.5.22-

IFRS 7.35F(b)

IFRS 9.B5.5.37

IFRS 7 33(b)

24 IAS 34.16A(d)

2.3 Financial assets (continued)

The Company allocates its assets subject to ECL calculations to one of these categories, determined as follows:

IFRS 9.5.5.1 12mECL The 12mECL is calculated as the portion of long term ECLs (LTECLs) that represent the IFRS 9 B5 5 44 ECLs that result from default events on a financial instrument that are possible within 12 months after the reporting date. The Company calculates the 12mECL allowance based on the expectation of a default occurring in the 12 months following the reporting date. These expected 12-month default probabilities are applied to a forecast EAD and multiplied by the expected LGD and discounted by an appropriate EIR. This calculation is made for each of the four scenarios, as explained above. IFRS 9.5.5.3 LTECL When an instrument has shown a significant increase in credit risk since origination, IFRS 9.B5.5.44 the Company records an allowance for the LTECLs. The mechanics are similar to those explained above, including the use of multiple scenarios, but PDs and LGDs are estimated over the lifetime of the instrument. The expected losses are discounted by an appropriate EIR. IFRS 9.5.5.3 For debt instruments considered credit-impaired, the Company recognises the lifetime Impairment IFRS 9.85.5.44 expected credit losses for these instruments. The method is similar to that for LTECL

2.3.6.2. Debt instruments measured at fair value through other comprehensive income

assets, with the PD set at 100%.

The ECLs for debt instruments measured at FVOCI do not reduce the carrying amount of these financial assets IFRS 9.5.5.2 in the statement of financial position, which remains at fair value. Instead, an amount equal to the allowance that would arise if the assets were measured at amortised cost is recognised in OCI with a corresponding charge to profit or loss. The accumulated gain recognised in OCI is recycled to the profit or loss upon derecognition of the assets.

2.3.6.3. Forward looking information

In its ECL models, the Company relies on a broad range of forward-looking information as economic inputs, *IFRS 7.35G(b)* such as:

- GDP growth
- Central Bank base rates

Commentary

The above inputs are general economic indicators that we have chosen for illustrative purposes only. In practice, further indicators such as commodity price inflation rates, currency exchange rates and government budget deficits may be used too.

The illustrative disclosure is provided on the assumptions:

- That it is the Company's business model to invest in debt instruments that are quoted and that are graded
 - in the top investment category
- Where the credit risk of any debt instrument deteriorates, the Company will sell the instrument and purchase instruments meeting the required investment grade

Entities will need to ensure that their disclosures adequately reflect the nature of ECL calculations relevant for its financial assets to comply with the requirements of IFRS 9.

2.3.7. Write-offs

Financial assets are written off either partially or in their entirety only when the Company has stopped pursuing the recovery. If the amount to be written off is greater than the accumulated loss allowance, the difference is first treated as an addition to the allowance that is then applied against the gross carrying amount. Any subsequent recoveries are credited to credit loss expense. There were no write-offs over the periods reported in these financial statements.

IFRS 7.35F(e) IFRS 9.5.4.4

2.4. Recognition of interest income

2.4.1. The effective interest rate method

Under IFRS 9, interest income is recorded using the effective interest rate (EIR) method for all financial assets measured at amortised cost. Similar to interest bearing financial assets previously classified as available-for-sale or held to maturity under IAS 39, interest income on interest bearing financial assets measured at EVOCL under					
IFRS 9 is also recorded using the EIR method. The EIR is the rate that exactly discounts estimated future cash receipts through the expected life of the financial asset or, when appropriate, a shorter period, to the gross carrying amount of the financial asset.	IFRS 9 Appendix A				
The EIR (and therefore, the amortised cost of the financial asset) is calculated by taking into account transaction costs and any discount or premium on acquisition of the financial asset as well as fees and costs that are an integral part of the EIR. The Company recognises interest income using a rate of return that represents the best estimate of a constant rate of return over the expected life of the debt instrument.	IFRS 9.B5.4.1 IFRS 9.B5.4.4				
If expectations of a fixed rate financial asset's cash flows are revised for reasons other than credit risk, and the changes to future contractual cash flows are discounted at the original EIR with a consequential adjustment to the carrying amount. The difference to the previous carrying amount is booked as a positive or negative adjustment to the carrying amount of the financial asset in the statement of financial position with a corresponding increase or decrease in interest income.	IFRS 9.B5.4.4-7				
For floating-rate financial instruments, periodic re-estimation of cash flows to reflect the movements in the market rates of interest also alters the effective interest rate, but when instruments were initially recognised at an amount equal to the principal, re-estimating the future interest payments does not significantly affect the carrying amount of the asset or the liability.	IFRS 9.B5.4.5				
2.4.2. Interest and similar income					
Interest income comprises amounts calculated using the effective interest method and other methods. These are disclosed separately on the face of the income statement.					
In its <i>Interest income calculated using the effective interest method</i> the Company only includes interest on financial instruments at amortised cost or FVOCI.	IFRS 9.5.4.1 IFRS 9.5.7.11				
<i>Other interest income</i> includes interest on all financial assets measured at FVPL, using the contractual interest rate.					
The Company calculates interest income on financial assets, other than those considered credit-impaired, by applying the EIR to the gross carrying amount of the financial asset.					

3. Insurance and financial risk

Commentary

The requirements to disclose information relating to the nature, timing and uncertainty of future cash flows that arise from insurance contracts are not new. Many similar insurance and financial (including credit, liquidity and market) risk disclosures were included in IFRS 4, often phrased to the effect that an insurer should make disclosures about insurance contracts, assuming that these were within the scope of IFRS 7. The equivalent disclosures now required by IFRS 17 are more specific to the circumstances of the measurement of insurance contracts in the standard, with no cross reference to IFRS 7.

There are a number of subtle differences between the new and existing disclosures, for example, IFRS 17.128(a)(ii) requires the sensitivity analyses for each type of market risk to be disclosed in a way that explains the relationship between the sensitivities to changes in risk exposures arising from insurance contracts and those arising from financial assets held. In addition, claims development figures must now be undiscounted, whereas IFRS 4 was silent on this.

In order to reflect overall financial risk disclosure for the Company, relevant disclosures from IFRS 7.31-42 have been presented alongside the IFRS 17 required disclosures in section 3.2 below.

Disclosures relevant to the impairment accounting under IFRS 9 for instruments held by the Company as required by IFRS 7.35A-N are illustrated in Note 3.2.4.3 below.

3.1. Insurance risk

3.1.1. Non-Life insurance contracts and reinsurance contracts

The Company principally issues the following types of non-life insurance contracts: personal accident; marine; property; and liability reinsurance.

For non-life insurance contracts, the most significant risks arise from climate changes, natural disasters and terrorist activities. For longer tail claims that take some years to settle, there is also inflation risk.

The objective of the Company is to ensure that sufficient reserves are available to cover the liabilities associated with these insurance and reinsurance contracts that it issues. The risk exposure is mitigated by diversification across the portfolios of insurance contracts. The variability of risks is also improved by careful selection and implementation of underwriting strategy guidelines, as well as the use of reinsurance held arrangements. Furthermore, strict claim review policies to assess all new and ongoing claims, regular detailed review of claims handling procedures and frequent investigation of possible fraudulent claims are established to reduce the risk exposure of the Company. The Company further enforces a policy of actively managing and promptly settling claims, in order to reduce its exposure to unpredictable future developments that can negatively impact the business. Inflation risk is mitigated by taking expected inflation into account when estimating insurance contract liabilities and pricing appropriately.

The Company purchases reinsurance as part of its risk mitigation programme. Reinsurance held is placed on a proportional basis. Proportional reinsurance is quota-share reinsurance which is taken out to reduce the overall exposure of the Company to its marine business.

Amounts recoverable from reinsurers are estimated in a manner consistent with underlying insurance contract liabilities and in accordance with the reinsurance contracts. Although the Company has reinsurance arrangements, it is not relieved of its direct obligations to its policyholders and thus a credit exposure exists with respect to reinsurance held, to the extent that any reinsurer is unable to meet its obligations. The Company's placement of reinsurance is diversified such that it is neither dependent on a single reinsurer nor are the operations of the Company substantially dependent upon any single reinsurance contract.

There is no single counterparty exposure that exceeds 5% of total reinsurance assets at the reporting date. The following tables show the concentration of net insurance contract liabilities by type of contract:

		2023			2022		IFRS 17.125(a
In €000	Reinsurance			Reinsurance			-
	Insurance	held	Net	Insurance	held	Net	
Personal accident insurance	5,079	-	5,079	6,324	-	6,324	
Marine insurance	4,005	(808)	3,197	3,830	(1,408)	2,422	
Property insurance	2,887	-	2,887	2,379	-	2,379	
Liability reinsurance issued	998	-	998	1,007	-	1,007	
Total net insurance							
contracts	12,969	(808)	12,161	13,540	(1,408)	12,132	

IFRS 17.127

3.1. Insurance risk (continued)

The geographical concentration of the Company's insurance contract liabilities is noted below. The disclosure is based on the countries where the business is written:

IFRS 17.127 IFRS 17.125(a)

			2023		
In €000	Personal accident insurance	Marine insurance	Property insurance	Liability reinsurance	Total
Euroland	5,079	3,022	2,887	998	11,986
Contracts issued	5,079	3,224	2,887	998	12,188
Reinsurance held	-	(202)	-	-	(202)
United States	-	158	-	-	158
Contracts issued	-	764	-	-	764
Reinsurance held	-	(606)	-	-	(606)
Total net insurance contracts	5,079	3,180	2,887	998	12,145

	2022									
In €000	Personal accident insurance	Marine insurance	Property insurance	Liability reinsurance	Total					
Euroland	6,324	2,175	2,379	1,007	11,885					
Contracts issued	6,324	2,622	2,379	1,007	12,332					
Reinsurance held	-	(447)	_	-	(447)					
United States	-	247	-	-	247					
Contracts issued	-	1,208	-	_	1,208					
Reinsurance held		(961)	-	-	(961)					
Total net insurance contracts	6,324	2,422	2,379	1,007	12,130					

3.1. Insurance risk (continued)

3.1.1.1. Sensitivities

The liability for incurred claims is sensitive to the key assumptions in the table below. It has not been possible to quantify the sensitivity of certain assumptions such as legislative changes or uncertainty in the estimation process.

The following sensitivity analysis shows the impact on gross and net liabilities, profit before tax and equity for reasonably possible movements in key assumptions with all other assumptions (refer Note <u>5.1.2</u>) held constant. The correlation of assumptions will have a significant effect in determining the ultimate impacts, but to demonstrate the impact due to changes in each assumption, assumptions have been changed on an individual basis. It should be noted that movements in these assumptions are non linear. The method used for deriving sensitivity information and significant assumptions did not change from the previous period.

IFRS 17.128(b)

IFRS 17.128(c) IFRS 17.128(a)(i)

			2023		
In €000	Change in	Impact on profit before tax gross of	Impact on profit before tax net of	Impact on equity gross of	Impact on equity net of
	assumptions	reinsurance	reinsurance	reinsurance	reinsurance
Weighted average term to settlement	+ 10 %	42	40	38	37
Expected loss	+ 10 %	(733)	(712)	(718)	(704)
Inflation rate	+1%	(110)	(107)	(81)	(78)
Weighted average term to settlement	- 10 %	(42)	(40)	(38)	(37)
Expected loss	- 10 %	733	712	718	704
Inflation rate	-1%	110	107	81	78

			2022		
In €000	Change in	Impact on profit before tax gross of reinsurance	Impact on profit before tax net of reinsurance	Impact on equity gross of reinsurance	Impact on equity net of reinsurance
Weighted average term to settlement	+ 10 %	44	41	40	39
Expected loss	+ 10 %	(775)	(741)	(764)	(733)
Inflation rate	+ 1 %	(119)	(115)	(85)	(83)
Weighted average term to settlement	- 10 %	(44)	(41)	(40)	(39)
Expected loss	- 10 %	775	741	764	733
Inflation rate	-1%	119	115	85	83

Commentary

The impact of sensitivities to changes in discount rates is minimal due to the combination of:

- The liability for incurred claims for the portfolio included in property insurance product line not being discounted as claims are expected to be settled within a year
- The discount rate for liability for remaining coverage being set at the date of initial recognition remaining unchanged and therefore not subject to variation

3.1. Insurance risk (continued)

3.1.1.2. Claims development table

The following tables show the estimates of cumulative incurred claims, including both claims notified and IBNR for each successive accident year at each reporting date, together with cumulative payments to date.

As required by IFRS 17, in setting claims provisions, the Company gives consideration to the probability and magnitude of future experience being more adverse than assumed which is reflected in the risk adjustment. In general, the uncertainty associated with the ultimate cost of settling claims is greatest when the claim is at an early stage of development. As claims develop, the ultimate cost of claims becomes more certain.

The Company has not disclosed previously unpublished information about claims development that occurred earlier than five years before the end of the annual reporting period in which it first applies IFRS 17.

€000	Before							IFRS 17.130
Accident year	2019*	2019*	2020*	2021	2022	2023	Total	
At end of accident year				1,209	1,115	1,109		
One year later				1,223	1,088			
Two years later				1,225				
Gross estimates of the undiscounted amount of the claims				1,225	1,088	1,109	3,422	
At end of accident year				(345)	(381)	(316)		
One year later				(956)	(925)			
Two years later				(1,214)				
Cumulative payments to date				(1,214)	(925)	(316)	(2,455)	
Gross undiscounted liabilities for incurred claims				11	163	793	967	
Effect of discounting							(76)	
Total gross liabilities for incurred claims							891	
			Estim prese f	ates of the ent value of future cash				
		Note		flows	Risk adjust	ment	Total	-
Total gross liabilities for incurred clai	ms			869		22	891	IFRS 17.130
Related to								
Personal accident insurance		<u>11.1.1</u>		869		22	891	

Gross undiscounted liabilities for incurred claims for 2023 - Personal accident insurance

* For this product line there are no open claims for these accident years.

3.1. Insurance risk (continued)

Gross undiscounted liabilities for incurred claims for 2023 - Marine Insurance

€000	Before							IFRS 17.130
Accident year	2019	2019	2020	2021	2022	2023	Total	
At end of accident year		1,264	1,359	1,448	2,222	2,158		
One year later		1,304	1,378	1,424	2,238			
Two years later		1,300	1,332	1,433				
Three years later		1,329	1,368					
Four years later		1,352						
Gross estimates of the undiscounted amount of the claims		1,352	1,368	1,433	2,238	2,158	8,549	
At end of accident year		(319)	(411)	(511)	(616)	(544)		
One year later		(839)	(961)	(984)	(1,360)			
Two years later		(1,080)	(1,167)	(1,206)				
Three years later		(1,224)	(1,315)					
Four years later		(1,296)						
Cumulative payments to date		(1,296)	(1,315)	(1,206)	(1,360)	(544)	(5,721)	
Gross undiscounted liabilities for incurred claims	228	56	53	227	878	1,614	3,056	
Effect of discounting							(205)	
Total gross liabilities for incurred claims							2,851	
			Estima presen fu	tes of the t value of ture cash				
		Note		flows	Risk adjustm	nent	Total	
Total gross liabilities for incurred clair	ns			2,780		70	2,851	IFRS 17.130
Related to								
Marine insurance		11.1.2		2,780		70	2,851	

3.1. Insurance risk (continued)

Net undiscounted liability for incurred claims for 2023 - Marine insurance

€000	Before							IFI
Accident year	2019	2019	2020	2021	2022	2023	Total	_
At end of accident year		923	992	1,086	1,328	1,572		-
One year later		952	1,006	1,068	1,290			
Two years later		949	972	1,074				
Three years later		970	999					
Four years later		987						
Net estimates of the undiscounted amount of the claims		987	999	1,074	1,290	1,572	5,922	
At end of accident year		(191)	(247)	(307)	(370)	(327)		
One year later		(503)	(576)	(591)	(816)			
Two years later		(648)	(700)	(724)				
Three years later		(735)	(789)					
Four years later		(777)						
Cumulative payments to date		(777)	(789)	(724)	(816)	(327)	(3,433)	
Net undiscounted liability for incurred claims	148	210	209	351	474	1,245	2,637	
Effect of discounting							(127)	
Total net liabilities for incurred claims							2,510	

			IFRS 17.130		
	Note	cash flows	adjustment	Total	
Gross liabilities for incurred claims	<u>11.1.2</u>	2,780	70	2,851	
Amounts recoverable from reinsurers	<u>11.2.1</u>	(332)	(8)	(341)	
Total net liabilities for incurred claims		2,448	62	2,510	
Marine insurance	<u>11.1.2, 11.2.1</u>	2,448	62	2,510	

3.1. Insurance risk (continued)

Gross undiscounted liabilities for incurred claims for 2023 - Liability reinsurance issued

€000	Before							IFRS 17.130
Accident year	2019*	2019*	2020	2021	2022	2023	Total	
At end of accident year			1,344	1,296	1,232	1,190		
One year later			1,333	1,329	1,224			
Two years later			1,345	1,334				
Three years later			1,349					
Gross estimates of the undiscounted amount of the claims			1,349	1,334	1,224	1,190	4,997	
At end of accident year			(758)	(731)	(795)	(615)		
One year later			(1,159)	(1,131)	(1,163)			
Two years later			(1,300)	(1,271)				
Three years later			(1,340)					
Cumulative payments to date			(1,340)	(1,271)	(1,163)	(615)	(4,389)	
Gross undiscounted liabilities for incurred claims			9	63	61	475	608	
Effect of discounting							(104)	
Total gross liabilities for incurred claims							504	

* For this product line there are no open claims for these accident years.

	Note	Estimates of the present value of future cash flows	Risk adjustment	Total	
Total gross liabilities for incurred claims		493	11	504	IFRS 17.130
Related to					
Liability reinsurance issued	<u>11.1.4</u>	493	11	504	

Commentary

The following should be noted in respect of the disclosure provided above:

- 1) The disclosure is provided for each product line in accordance with the Company's decision to provide disaggregated disclosures on this basis.
- 2) The Company presents its claims development on an accident year basis as this is consistent with how the business is managed. IFRS 17 does not prescribe the format of the disclosure of claims development and the presentation of this information by underwriting or reporting year may also be permissible.
- 3) IFRS 17 specifically requires the previous estimates of amounts of claims to be presented on an undiscounted basis. IFRS 4 was silent regarding this.
- 4) The Company has elected to use the practical expedient for transition in IFRS 17.C28 to not disclose previously unpublished information about its claims development that occurred earlier than five years before the end of the annual reporting period in which it first applies IFRS 17.
- 5) For the Property insurance product line, for which uncertainty about the amount and timing of all claims payments is typically resolved within one year, the Company has not disclosed development information.

3.1. Insurance risk (continued)

- 6) For product lines with some longer tail claims, in respect of claims for which uncertainty about the amount and timing of the claims payments is typically resolved within one year, the Company has disclosed full development information. It could also be acceptable to not disclose the full information. It could also be acceptable to not disclose the full information and rather to include the related liability for incurred claims amount as a reconciling item. Entities should carefully consider which approach provides appropriate information for their users.
- 7) The tables are reflective of the complete balance of the liability for incurred claims, which may include claims handling costs and other incurred insurance expenses outstanding at year end. An entity may choose to exclude such other incurred insurance expenses from the main development disclosure, but include the amount as a reconciling item to the total of the liability for incurred claims balance.
- 8) Both gross and net claims development disclosure has been presented for illustrative purposes.
- 9) Amounts reflected are inclusive of the related risk adjustment. Alternatively, an entity may decide to present the tables excluding risk adjustment, and reflect the risk adjustment as a reconciling item.
- 10) IFRS 17.130 requires the reconciliation of the claims development disclosure with the aggregate carrying amount of the groups of insurance contracts, which an entity discloses applying paragraph 100(c). This is provided below the claims development table.

3.2. Financial risk

Commentary

The disclosure included below in respect of financial assets is considered appropriate given the non-complex lower risk financial assets held by the Company. Entities will need to ensure that their disclosures are specific to their individual circumstances and address the nature of risks and terms of all relevant financial assets and liabilities held.

3.2.1. Liquidity risk

Liquidity risk is the risk that the Company will encounter difficulty in meeting obligations associated with insurance liabilities that are settled by delivering cash or another financial asset. In respect of catastrophic events, there is also a liquidity risk associated with the timing differences between gross cash outflows and expected reinsurance recoveries.

The following policies and procedures are in place to mitigate the Company's exposure to liquidity risk:

The Company's liquidity risk policy sets out the assessment and determination of what constitutes liquidity risk for the Company. Compliance with the policy is monitored and exposures and breaches are reported to the Company's risk committee. The policy is regularly reviewed for pertinence and for changes in the risk environment.

The Company maintains a portfolio of highly marketable and diverse assets that can be easily liquidated in the event of an unforeseeable interruption of cash flow. The Company also has committed lines of credit that it can access to meet liquidity needs.

3.2.1.1. Maturity profiles

Maturity analysis for insurance and reinsurance contract liabilities (present value of future cash flows basis)

The following table summarises the maturity profile of portfolios of insurance contracts issued that are liabilities and portfolios of reinsurance contracts held that are liabilities of the Company based on the estimates of the present value of the future cash flows expected to be paid out in the periods presented.

Commentary

IFRS 17.132 provides entities with two options for completing the maturity profile. The option that is not presented below is to provide an analysis of the remaining contractual undiscounted net cash flows. Entities should consider which is most appropriate to their user. The Company has provided an analysis of maturity profiles based on the estimates of the present value of future cash flows by estimated timing as it is in line with the Company's current accounting policy and industry's best practice.

The disclosure below only includes liabilities for incurred claims. As per IFRS 17.132(b), the inclusion of amounts for the liabilities for remaining coverage is not required. Due to the nature of the contracts held, there are no amounts relating to insurance contracts that are payable on demand. Therefore, no disclosure has been provided in respect of IFRS 17.132(c)

IFRS 17.132(b)

IFRS 17.125(a)

IFRS 17.127

3.2. Financial risk (continued)

	2023											
In €000	Up to 1											
-	year	1-2 years	2-3 years	3-4 years	4-5 years	>5 years	Total					
Personal accident insurance	495	374	_	_	-	_	869					
Marine insurance	1,402	445	417	185	108	223	2,780					
Property insurance	2,729	-	-	-	-	-	2,729					
Liability reinsurance	389	74	30	_	-	-	493					
TOTAL	5,015	893	447	185	108	223	6,871					

	2022										
In €000	Up to 1	1-2 years	2-3 vears	3-4 years	A-5 years	>5 years	Total				
-	year	I Z years	L J years	J 4 years	4 5 years	25 years	Total				
Personal accident insurance	489	369	-	-	-	-	858				
Marine insurance	1,058	336	315	140	82	168	2,099				
Property insurance	1,942	-	-	-	-	-	1,942				
Liability reinsurance	379	72	29	-	-	-	480				
TOTAL	3,869	778	344	140	82	168	5,380				

Maturity analysis for financial assets (contractual undiscounted cash flow basis)

The following table summarises the maturity profile of financial assets of the Company based on remaining undiscounted contractual cash flows, including interest receivable:

IFRS 7.B11E

				2023				
In €000	Up to 1	1-2	2-3	3-4	4-5	>5	No	
	year	years	years	years	years	years	maturity	Total
Financial assets								
Cash and cash equivalents	2,276	-	-	-	-	-	-	2,276
Equity and debt instruments at FVPL	4,586	655	547	220	129	264	507	6,908
Debt instruments at FVOCI	2,475	2,109	2,058	2,038	1,752	1,392	-	11,824
Debt instruments at amortised cost	254	233	205	159	208			1,059
TOTAL	9,591	2,997	2,810	2,417	2,089	1,656	507	22,067

3.2. Financial risk (continued)

				20	JEE			
In €000	Up to 1	1-2	2-3	3-4	4-5	>5	No	
	year	years	years	years	years	years	maturity	Total
Financial assets								
Cash and cash equivalents	1,888	-	-	-	-	-	-	1,888
Equity and debt instruments at FVPL	3,606	408	339	136	79	163	902	5,633
Debt instruments at FVOCI	2,397	2,036	1,973	1,715	1,561	1,270	-	10,952
Debt instruments at amortised cost	249	214	187	203	163	_		1,016
TOTAL	8,140	2,658	2,499	2,054	1,803	1,433	902	19,489

2022

Commentary

IFRS 7.B11E requires an entity to disclose a maturity analysis of financial assets that it holds for managing liquidity risk (e.g., financial assets that are readily saleable or expected to generate cash inflows to meet cash outflows on financial liabilities) if that information is necessary to enable users of its financial statements to evaluate the nature and extent of liquidity risk.

Although this disclosure requirement is in respect of liquidity risk pertaining to financial liabilities, it has been included in this note, given that it is anticipated that this information is relevant for evaluating the nature and extent of liquidity risk relating to the Company's insurance and reinsurance contract liabilities.

It should be noted that IFRS 17.132 provides two bases for reflecting maturity analyses for insurance and reinsurance contract liabilities (present value of future cash flows or undiscounted contractual maturity), whereas IFRS 7 only allows for undiscounted contractual maturity.

Current and non-current assets and liabilities

The table below summarises the expected utilisation or settlement of assets and liabilities:

		2023			2022	
 In €000	No more	More		No more	More	
	than 12	than 12		than 12	than 12	
	months	months	Total	months	months	Total
Financial assets	9,420	11,845	21,265	7,965	11,050	19,015
Cash and cash equivalents	2,276	-	2,276	1,888	-	1,888
Equity and debt instruments at FVPL	4,475	2,122	6,597	3,518	1,934	5,452
Debt instruments at FVOCI	2,415	8,941	11,356	2,328	8,360	10,688
Debt instruments at amortised cost	254	782	1,036	231	756	987
Insurance contract assets	437	406	843	744	713	1,457
Insurance issued	22	13	35	24	25	49
Reinsurance held	415	393	808	720	688	1,408
Insurance contract liabilities	(8,305)	(4,699)	(13,004)	(8,111)	(5,478)	(13,589)
Insurance issued	(8,305)	(4,699)	(13,004)	(8,111)	(5,478)	(13,589)
Reinsurance held			_			_

IFRS 7.B11E

IAS 1.61

3.2. Financial risk (continued)

3.2.2. Market risk

Commentary

The sensitivity analysis required by IFRS 17.128(a)(ii) expands on the previous requirement of IFRS 4.39(d) by requiring the sensitivity analysis for each type of market risk to be disclosed in a way that explains the relationship between the sensitivities to changes in risk variables arising from insurance contracts and those arising from financial assets held by an entity.

IFRS 17.129 allows entities that use alternative methods to manage the sensitivity to risks arising from contracts within the scope of IFRS 17 to disclose such alternative sensitivities (similar to the provision in IFRS 4.39(d)(ii)). Further narrative information is also required to explain the method used to prepare such sensitivity, main parameters, assumptions, objective and any limitations. The use of alternative methods could result in inconsistencies between asset and liability information presented and reduce the usefulness of disclosure for users.

Market risk is the risk that the fair value or future cash flows of a financial instrument, insurance contract issued or reinsurance contract held will fluctuate because of changes in market prices. Market risk comprises three types of risk: foreign exchange rates (currency risk); market interest rates (interest rate risk); and market prices (price risk).

The Company's market risk policy sets out the assessment and determination of what constitutes market risk for it. Compliance with the policy is monitored and exposures and breaches are reported to the Company's risk committee. The policy is reviewed regularly for pertinence and for changes in the risk environment.

Guidelines are set for asset allocation and portfolio limit structure, to ensure that assets back specific policyholders' liabilities and that assets are held to deliver income and gains needed to meet the Company's contractual requirements.

The nature of the Company's exposure to market risks and its objectives, policies and processes used to manage and measure the risks have not changed from the previous period.

3.2.2.1. Currency risk

Currency risk is the risk that the fair value of future cash flows of a financial instrument, insurance contract assets and/or liabilities will fluctuate because of changes in foreign exchange rates.

IFRS 17.124(a),(b) IFRS 7.33-34 IFRS 17.128(aXii)

IFRS 17.124(c)

IFRS 7.33(c)

The Company's principal transactions are carried out in euros and its exposure to foreign exchange risk arises primarily with respect to the US dollar. The Company's financial assets are primarily denominated in the same currencies as its insurance contract liabilities.

The Company mitigates some of the foreign currency risk associated with insurance contracts by holding reinsurance contracts denominated in the same currencies as its insurance contract liabilities.

3.2. Financial risk (continued)

The table below summarises the Company's financial assets and insurance contract assets and liabilities by major currencies:

IFRS 17.125(a), IFRS 17.127

		2023			2022	
In €000	Euro	US dollar	Total	Euro	US dollar	Total
Financial assets	20,296	969	21,265	17,504	1,511	19,015
Cash and cash equivalents	2,231	45	2,276	1,865	23	1,888
Equity and debt instruments at FVPL	6,597	-	6,597	5,452	-	5,452
Debt instruments at FVOCI	10,432	924	11,356	9,200	1,488	10,688
Debt instruments at amortised cost	1,036	-	1,036	987	-	987
Insurance contract assets	235	608	843	494	963	1,457
Personal accident insurance	-	-	_	_	-	-
Marine insurance	33	2	35	47	2	49
Property insurance	-	-	-	-	-	-
Liability reinsurance	-	-	-	-	-	-
Reinsurance held	202	606	808	447	961	1,408
Insurance contract liabilities	(12,203)	(766)	(12,969)	(12,330)	(1,210)	(13,540)
Personal accident insurance	(5,079)	-	(5,079)	(6,324)	-	(6,324)
Marine insurance	(3,239)	(766)	(4,005)	(2,620)	(1,210)	(3,830)
Property insurance	(2,887)	-	(2,887)	(2,379)	-	(2,379)
Liability reinsurance	(998)	-	(998)	(1,007)	-	(1,007)
Reinsurance held	_		_	_	_	

The following analysis is performed for reasonably possible movements in key variables, with all other variables held constant, showing the impact on profit before tax and equity due to changes in the fair value of currency-sensitive monetary assets and liabilities, including those relating to insurance and reinsurance contracts. The correlation of variables will have a significant effect in determining the ultimate impact of currency risk, but to demonstrate the impact due to changes in variables, variables had to be changed on an individual basis. The method used for deriving sensitivity information and significant variables did not change from the previous period.

		20	23	20	22	IFRS 17.128(a)
In €000	Change in exchange rate	Impact on profit before tax	Impact on equity	Impact on profit before tax	Impact on equity	
Euro/US dollar exchange rate						
Insurance and reinsurance contracts	+ 10%	(16)	(17)	(25)	(26)	
Financial assets	+10%	106	83	149	119	
Insurance and reinsurance contracts	- 10%	16	17	25	26	
Financial assets	-10%	(106)	(83)	(149)	(119)	

3.2.2.2. Interest rate risk

Interest rate risk is the risk that the fair value or future cash flows of a financial instrument or insurance contract or reinsurance contract will fluctuate because of changes in market interest rates.

Floating rate instruments expose the Company to cash flow interest risk, whereas fixed interest rate instruments expose the Company to fair value interest rate risk.

There is no direct contractual relationship between financial assets and insurance contracts. However, the Company's interest rate risk policy requires it to manage the extent of net interest rate risk by maintaining an appropriate mix of fixed and variable rate instruments to support the insurance contract liabilities. The policy also requires it to manage the maturities of interest bearing financial assets.

IFRS 17.124(a),(b) IFRS 7.33(a)

IFRS 17 128(h)

IFRS 17.128(c)

IFRS 17.128(b)

3.2. Financial risk (continued)

The Company has no significant concentration of interest rate risk.

The Company is exposed to interest rate risk through its debt instruments held and in respect of liabilities or assets for incurred claims where cash flows are not expected to be settled within a year from when claims are incurred. The Company's exposure to interest rate risk sensitive insurance and reinsurance contracts and debt instruments are, as follows:

In €000	2023	2022
Insurance contract assets	340	442
Personal accident insurance	-	-
Marine insurance	-	-
Property insurance	-	-
Liability reinsurance	-	-
Reinsurance held	340	442
Insurance contract liabilities	(4,142)	(3,437)
Personal accident insurance	(869)	(858)
Marine insurance	(2,780)	(2,099)
Property insurance	-	-
Liability reinsurance	(493)	(480)
Reinsurance held	-	-
Debt instruments at FVOCI	10,356	10,688
Debt instruments at amortised cost	1,036	987

Commentary

In respect of insurance or reinsurance contract assets or liabilities for remaining coverage to which the PAA is applied:

If at initial recognition, an entity expects that the time between providing each part of the services and the related premium due date is no more than a year apart, then the time value of money is not required to be taken into account

Or

If this is not the case, then the liability or asset is calculated using a discount rate determined at initial recognition and, as such, the balance is not sensitive to movements in interest rates.

In respect of insurance or reinsurance contract assets or liabilities for incurred claims to which the PAA is applied:

If cash flows are expected to be paid or received in one year or less from the date the claims are incurred, then the time value of money is not required to be taken into account

Or

If this is not the case, then the liability or asset would be adjusted using a discount rate updated at each reporting period, therefore, resulting in the balance being sensitive to interest rate movements.

The following analysis is performed for reasonably possible movements in key variables with all other variables held constant, showing the impact on profit before tax and equity. The correlation of variables will have a significant effect in determining the ultimate impact of interest rate risk, but to demonstrate the impact due to changes in variables, variables have been changed on an individual basis. It should be noted that movements in these variables are non-linear. The method used for deriving sensitivity information and significant variables has not changed from the previous period.

IFRS 17.128(b) IFRS 7.40(a), (b),(c)

IFRS 17.128(c)

IFRS 17.127 IFRS 7.34(c)

IFRS 17.125(a)

3.2. Financial risk (continued)

IFRS 17.128(a)(ii)

IFRS 7.33(b)

IFRS 7.34(c) IFRS 17.127

IFRS 17.124(a)(b)

	20	23		2022	
In €000	Change in Interest rate	Impact on profit before tax	Impact on equity	Impact on profit before tax	Impact on equity
Insurance and reinsurance contracts	+100 bps	32	50	29	47
Debt instruments	+100 bps	(284)	(314)	(291)	(321)
Insurance and reinsurance contracts	- 100 bps	(33)	(52)	(31)	(51)
Debt instruments	- 100 bps	302	332	305	338

3.2.2.3. Price risk

 Price risk is the risk that the fair value or future cash flows of financial instruments or insurance contract
 IFRS 17.128(a)(ii)

 assets and/or liabilities will fluctuate because of changes in market prices (other than those arising from
 IFRS 17.128(a)(ii)

 interest rate or foreign exchange rate risk), whether those changes are caused by factors specific to the
 IFRS 7.33(a)

 individual financial instrument or contract, or by factors affecting all similar contracts or financial instruments
 IFRS 7.33(a)

The Company's price risk exposure relates to financial assets and financial liabilities whose values will fluctuateIFRS 7.33(b)as a result of changes in market prices. The Company does not issue any participating contracts. Therefore,IFRS 17.124(a)there are no insurance or reinsurance contracts which are exposed to price risk.IFRS 17.124(a)

The Company's price risk policy requires it to manage such risks by setting and monitoring objectives and constraints on investments, diversification plans, limits on individual and total equity instruments.

The Company has no significant concentration of price risk.

At the reporting date, the Company's exposure to price risk is through equity investments held at fair value listed on the Euronext was $\leq 507,000 (2022: \leq 902,000)$. Given that the changes in fair values of the equity investments held are strongly positively correlated with changes of the Euronext 100 market index, the Company has determined that an increase/(decrease) of 10% on the index could have an impact of approximately $\leq 50,700 (2022: \leq 90,200)$ increase/(decrease) on the profit before tax and approximately $\leq 38,500 (2022: \leq 68,700)$ increase/decrease on equity.

This analysis was performed for reasonably possible movements in the market index with all other variables held constant. The correlation of variables will have a significant effect in determining the ultimate impact on price risk, but to demonstrate the impact due to changes in variables, variables had to be changed on an individual basis. It should be noted that movements in these variables are non-linear. The method used for deriving sensitivity information and significant variables has not changed from the previous period.

3.2.3. Operational risks

Operational risk is the risk of loss arising from system failure, human error, fraud or external events. When controls fail to perform, operational risks can cause damage to reputation, have legal or regulatory implications or can lead to financial loss. The Company cannot expect to eliminate all operational risks, but by initiating a rigorous control framework and by monitoring and responding to potential risks, the Company is able to manage the risks. Controls include effective segregation of duties, access controls, authorisation and reconciliation procedures, staff education and assessment processes, including the use of internal audit. Business risks such as changes in environment, technology and the industry are monitored through the Company's strategic planning and budgeting process.

Commentary

IFRS 7 and IFRS 17 do not specifically require disclosure of operational risk because it is not necessarily related to financial instruments or the amount, timing and uncertainty of future cash flows that arise from insurance and reinsurance contracts. The above narrative on operational risk is included for illustrative purposes only and does not cover all the possible operational risks for an insurer.

3.2. Financial risk (continued)

3.2.4. Credit risk

Commentary

The specific credit risk disclosures required by IFRS 17.121-126 and 131 along with disclosures relevant to the impairment accounting under IFRS 9 for instruments held by the Company as required by IFRS 7.35A-N are illustrated below.

In respect of the financial assets held by the Company, the following disclosures are considered appropriate given the non-complex lower risk financial assets held. Entities will need to ensure that their disclosures are specific to their individual circumstances and address the credit risk nature and terms of all relevant financial assets and liabilities held.

Credit risk is the risk that one party to a financial instrument, insurance contract issued in an asset position or IFRS 7.33(a).(b) reinsurance contract held will cause a financial loss for the other party by failing to discharge an obligation.

The following policies and procedures are in place to mitigate the Company's exposure to credit risk.

The Company's credit risk policy sets out the assessment and determination of what constitutes credit risk for the Company. Compliance with the policy is monitored and exposures and breaches are reported to the Company's risk committee. The policy is regularly reviewed for pertinence and for changes in the risk environment.

Credit risk relating to financial instruments is monitored by the Company's investment team. It is their responsibility to review and manage credit risk, including environmental risk for all counterparties. The Company manages and controls credit risk by setting limits on the amount of risk it is willing to accept for individual counterparties and for geographical and industry concentrations, and by monitoring exposures in relation to such limits. It is the Company's policy to invest in high quality financial instruments with a low risk of default. If there is a significant increase in credit risk, the policy dictates that the instrument should be sold and amounts recovered reinvested in high quality instruments.

Reinsurance is placed with counterparties that have a good credit rating and concentration of risk is avoided by following policy guidelines in respect of counterparties' limits that are set each year by the board of directors and are subject to regular reviews. At each reporting date, management performs an assessment of creditworthiness of reinsurers and updates the reinsurance purchase strategy.

The credit risk in respect of customer balances incurred on non-payment of premiums will only persist during the grace period specified in the policy document. Commission paid to intermediaries is netted off against amounts receivable from them to reduce the risk of default.

The nature of the Company's exposure to credit risk and its objectives, policies and processes used to manage and measure the risks have not changed from the previous period.

3.2.4.1. The Company's internal rating process

The Company's investment team prepares internal ratings for instruments held in which its counterparties are rated using internal grades (high grade, standard grade, sub-standard grade, past due but not impaired and individually impaired). The ratings are determined incorporating both qualitative and quantitative information that builds on information from Euroland Credit Agency, supplemented with information specific to the counterparty and other external information that could affect the counterparty's behaviour. These information sources are first used to determine whether an instrument has had a significant increase in credit risk.

IFRS 17.124(a),(b)

IFRS 17.124(c) IFRS 7.33(b)

3.2. Financial risk (continued)

The Company's internal credit rating grades:

Internal rating grade	Internal rating description	Euroland Credit Agency's rating (when applicable)
1-2	High grade	Very good +
3	High grade	Very good
4	High grade	Very good -
5-6	Standard grade	Good +
7-8	Standard grade	Good
9-10	Standard grade	Good -
11	Standard grade	Average +
12	Standard grade	Average
13	Sub-standard grade	Average -
14	Sub-standard grade	Bad +
15	Past due but not impaired	Bad
16	Past due but not impaired	Bad -
17	Individually impaired	Very bad

3.2.4.2. Credit exposure

The table below provides information regarding the credit risk exposure of the Company by classifying Very good+ as the highest possible rating. Assets that fall outside the range of Very good+ to Good are classified as non-investment grade. The amounts represent the maximum amount exposure to credit risk. The credit risk analysis below is presented in line with how the Company manages the risk. The Company manages its credit exposure based on the carrying value of the financial instruments and insurance and reinsurance contract assets.

Industry analysis

	2023							
 In €000	Financial Services	Government	Retail and Wholesale	Construction and Materials	Manufacturing and Petroleum	Total		
Cash and cash equivalents	2,276	-	-	-	-	2,276		
Debt instruments at FVPL	2,094	3,572	497	233	201	6,597		
Debt instruments at FVOCI	3,311	6,086	743	734	482	11,356		
Debt instruments at amortised cost	_	1,036	_	_	-	1,036		
Reinsurance contract assets	808	-				808		
Total credit risk exposure	8,489	10,694	1,240	967	683	22,073		

IFRS 7.34(a)

3.2. Financial risk (continued)

	2022									
In €000	Financial Services	Government	Retail and Wholesale	Construction and Materials	Manufacturing and Petroleum	Total				
Cash and cash equivalents	1,888	_	_	-	-	1,888				
Debt instruments at FVPL	2,056	3,141	186	69	-	5,452				
Debt instruments at FVOCI	3,117	5,728	729	705	409	10,688				
Debt instruments at amortised cost	-	987	_	-	-	987				
Reinsurance contract assets	1,408					1,408				
Total credit risk exposure	8,469	9,856	915	774	409	20,423				

Credit exposure by credit rating

The table below provides information regarding the credit risk exposure of the Company by classifying assets according to the Company's credit ratings of counterparties:

			2023		
In €000	High grade	Standard grade	Past due but not impaired	Not rated	Total
Cash and cash equivalents	2,276	-	-	-	2,276
Debt instruments at FVPL	6,299	298	-	-	6,597
Debt instruments at FVOCI	9,470	1,886	-	-	11,356
Debt instruments at amortised cost	1,036	_	_	_	1,036
Reinsurance contract assets	796	12			808
Total credit risk exposure	19,877	2,196			22,073

2022

IFRS 17,131(a) IFRS 17.131(b) IFRS 17.125(a) IFRS 7.35M

In €000	High grade	Standard grade	Past due but not impaired	Not rated	Total
Cash and cash equivalents	1,888	_	-	_	1,888
Debt instruments at FVPL	5,220	232	_	-	5,452
Debt instruments at FVOCI	8,930	1,758	_	-	10,688
Debt instruments at amortised cost	987	_	_	_	987
Reinsurance contract assets	1,390	18			1,408
Total credit risk exposure	18,415	2,008	-	_	20,423

The Company's maximum exposure to credit risk from insurance contract assets issued is €8,000 (2022: €8,000)

The Company actively manages its product mix to ensure that there is no significant concentration of credit *IFRS 17.127* risk.

3.2. Financial risk (continued)

3.2.4.3. Impairment assessment

The Company's ECL assessment and measurement method is set out below.

3.2.4.3.1.Significant increase in credit risk, default and cure

The Company continuously monitors all assets subject to ECLs. In order to determine whether an instrument or a portfolio of instruments is subject to 12mECL or LTECL, the Company assesses whether there has been a significant increase in credit risk since initial recognition.

The Company considers that there has been a significant increase in credit risk when any contractual payments are more than 30 days past due. In addition, the Company also considers a variety of instances that may indicate unlikeliness to pay by assessing whether there has been a significant increase in credit risk. Such events include:

IFRS 7 Appendix

IFRS 9.B5.5.36,

IFRS 7.B8A(c)

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- Internal rating of the counterparty indicating default or near-default
- The counterparty having past due liabilities to public creditors or employees
- The counterparty (or any legal entity within the debtor's group) filing for bankruptcy application/protection
- Counterparty's listed debt or equity suspended at the primary exchange because of rumours or facts about financial difficulties

The Company considers a financial instrument defaulted and, therefore, credit-impaired for ECL calculations in all cases when the counterparty becomes 90 days past due on its contractual payments. The Company may also consider an instrument to be in default when internal or external information indicates that the Company is unlikely to receive the outstanding contractual amounts in full. In such cases, the Company recognises a lifetime ECL.

In rare cases when an instrument identified as defaulted, it is the Company's policy to consider a financial instrument as 'cured' and, therefore, re-classified out of credit-impaired when none of the default criteria have been present for at least twelve consecutive months.

There has been no significant increase in credit risk or default for financial assets during the year.

3.2.4.3.2.Expected credit loss

The Company assesses the possible default events within 12 months for the calculation of the 12mECL. Given the investment policy, the probability of default for new instruments acquired is generally determined to be minimal and the expected loss given default ratio assumed to be 100%.

In rare cases where a lifetime ECL is required to be calculated, the probability of default is estimated based on economic scenarios.

3.2.4.4. Impairment losses on financial investments subject to impairment assessment

3.2.4.4.1.Debt instruments measured at FVOCI

The table below shows the fair value of the Company's debt instruments measured at FVOCI by credit risk, based on its internal credit rating system. Details of the Company's internal grading system are explained in Note <u>3.2.4.1</u>:

In €000	2023				IFRS 7.3		
Internal rating grade	12mECL	LTECL	Total	12mECL	LTECL	Total	
Performing							
High grade	9,470	-	9,470	8,930	-	8,930	
Standard grade	1,264	622	1,886	1,040	718	1,758	
Past due but not impaired						_	
Total Net Amount	10,734	622	11,356	9,970	718	10,688	

3.2. Financial risk (continued)

An analysis of changes in the fair value and the corresponding ECLs is, as follows:

-	2023			2022		
In €000	12mECL	LTECL	Total	12mECL	LTECL	Total
Fair value as at 1 January	9,970	718	10,688	8,853	673	9,526
New assets originated or purchased	1,800	-	1,800	600	-	600
Assets derecognised or matured	(1,886)	(156)	(2,042)	-	-	-
Accrued interest capitalised	690	42	732	548	47	595
Change in fair value	160	18	178	(31)	(4)	(35)
Movement between						_
At 31 December	10,734	622	11,356	9,970	718	10,688

-	2023			2022			IFRS 7.35H(a)-(c)(c)
In €000	12mECL	LTECL	Total	12mECL	LTECL	Total	IFRS 7.42P
ECL as at 1 January	18	43	61	17	42	59	
New assets originated or purchased Assets derecognised	4	-	4	1	-	1	
or matured (excluding write-offs)	(2)	(2)	(4)	-	-	-	
Unwind of discount	-	1	1	_	1	1	
Net foreign exchange expense/(income)	-	-	-	-	-	-	
Movement between						_	
At 31 December	20	42	62	18	43	61	

3.2.4.4.2.Debt instruments measured at amortised cost

The table below shows the credit quality and the maximum exposure to credit risk based on the Company's internal credit rating system and year-end stage classification. The amounts presented are gross of impairment allowances. Details of the Company's internal grading system are explained in Note <u>3.2.4.1</u>.

IFRS 7.35I(a)-(d)

						IFRS	\$ 7.35M
In €000	2023			2022			_
Internal rating grade	12mECL	LTECL	Total	12mECL	LTECL	Total	
- Performing							
High grade	1,038	-	1,038	989	-	989	
Standard grade	-	-	-	-	-	-	
Past due but not impaired -						_	
Total Gross Amount	1,038	-	1,038	989	_	989	
ECL	(2)	-	(2)	(2)	-	(2)	
Total Net Amount	1,036	-	1,036	987	-	987	
3.2. Financial risk (continued)

An analysis of changes in the gross amount and the corresponding ECLs is, as follows:

_		2023			2022	
In €000	12mECL	LTECL	Total	12mECL	LTECL	Total
Gross amount as at 1 January	989	-	989	940	-	940
New assets originated or purchased	-	-	-	-	-	-
Assets derecognised or matured (excluding write-offs)	-	-	-	-	-	-
Accrued interest capitalised	49	-	49	49	-	49
Movement between						_
At 31 December	1,038		1,038	989		989

Commentary

IFRS 7.IG20B provides a reconciliation in a tabular format to help address the requirements of IFRS 7.35I to provide an explanation of how significant changes in gross balances have contributed to changes in ECLs. The Company has provided a similar table for debt instruments measured at FVOCI.

-	2023				IFRS 7.35H(a)-(c) – IFRS 7.42P		
In €000	12mECL	LTECL	Total	12mECL	LTECL	Total	
ECL as at 1 January	2	-	2	2	-	2	_
New assets originated or purchased	-	-	-	-	-	-	
Assets derecognised or matured (excluding write- offs)	-	-	-	-	-	-	
Unwind of discount	-	-	_	-	-	-	
Movement between 12mECL and LTECL						_	
At 31 December	2		2	2		2	

Commentary

In respect of the requirements of IFRS 7.35J, these illustrative disclosures assume that there were no modifications of contractual cash flows on financial assets.

In respect of the requirements of IFRS 7.35K, these illustrative disclosures assume that there was no collateral held or other credit enhancements related to the debt instruments held by the Company.

In respect of the requirements of IFRS 7.35L, these illustrative disclosures assume that there were no debt instruments written off by the Company in the periods disclosed.

4. Capital

4.1. Capital management objectives, policies and approach

The Company has established the following capital management objectives, policies and approach to managing (AS 1.135(a)) the risks that affect its capital position:

- To maintain the required level of stability of the Company thereby providing a degree of security to policyholders
- To allocate capital efficiently and support the development of business by ensuring that returns on capital employed meet the requirements of its capital providers and shareholders
- ▶ To retain financial flexibility by maintaining strong liquidity and access to a range of capital markets
- ▶ To align the profile of assets and liabilities, taking account of risks inherent in the business
- To maintain financial strength to support new business growth and to satisfy the requirements of the policyholders, regulators and stakeholders
- To maintain strong credit ratings and healthy capital ratios in order to support its business objectives and maximise shareholders value

The Company is also subject to regulatory requirements within the jurisdictions in which it operates. SuchIAS 1.135(a)regulations not only prescribe approval and monitoring of activities, but also impose certain restrictiveinsolvency on the part of the insuranceprovisions (e.g., capital adequacy) to minimise the risk of default and insolvency on the part of the insuranceinsolvency on the part of the insuranceIAS 1.135(d)IAS 1.135(d)

The Company has met all of these requirements throughout the financial year.

In reporting financial strength, capital and solvency are measured using the rules prescribed by the Euroland *IFRS 17.126* Financial Services Authority (EFSA). These regulatory capital tests are based upon required levels of solvency, capital and a series of prudent assumptions in respect of the type of business written.

The Company's capital management policy is to hold sufficient capital to cover the statutory requirements based on the EFSA directives, including any additional amounts required by the regulator.

In determining groups of contracts, the Company has elected to include in the same group contracts where the IFRS 17.126 Company's ability to set prices or levels of benefits for policyholders with different characteristics is constrained by regulation.

Approach to capital management

The Company seeks to optimise the structure and sources of capital to ensure that it consistently maximises (AS 1.135(a) (iii) returns to the shareholders.

The Company's approach to managing capital involves managing assets, liabilities and risks in a coordinated way, assessing shortfalls between reported and required capital levels on a regular basis and taking appropriate actions to influence the capital position of the Company in the light of changes in economic conditions and risk characteristics. An important aspect of the Company's overall capital management process is the setting of target risk adjusted rates of return, which are aligned to performance objectives and ensure that the Company is focused on the creation of value for shareholders.

The primary source of capital used by the Company is total equity. The Company also uses, where it is efficient (AS 1.135(b)) to do so, sources of capital such as reinsurance, in addition to more traditional sources of funding.

The capital requirements are routinely forecast on a periodic basis and assessed against both the forecast available capital and the expected internal rate of return, including risk and sensitivity analyses. The process is ultimately subject to approval by the Board.

The Company has developed an Individual Capital Assessment (ICA) framework to identify the risks and quantify their impact on the economic capital. The ICA estimates how much capital is required to reduce the risk of insolvency to a remote degree of probability. The ICA has also been considered in assessing the capital requirements.

The Company has made no significant changes, from previous years, to its policies and processes for its capital (AS 1.135(c) structure.

4.1. Capital management objectives, policies and approach (continued)

Commentary

IAS 1.134 and IAS 1.135 require entities to make qualitative and quantitative disclosures regarding their objectives, policies and processes for managing capital. IAS 1.135(e) requires that if an entity has not complied with its externally imposed capital requirements, the consequence of such non-compliance must be disclosed. IFRS 17.126 requires entities to disclose the effect of the regulatory frameworks in which it operates; for example, minimum capital requirements or required interest-rate guarantees, which are similar to requirements under IAS1.134 and 1.135. Entities should disclose information based on the requirements of their regulatory framework.

Available capital resources:

31 December	1 January	IAS 1.135(b)	
2023	2022	2022	
8,591	6,477	5,112	
(1,121)	(1,418)	(1,421)	
7,470	5,101	3,691	
1,569	1,654	1,688	
	31 December 2023 8,591 (1,121) 7,470 1,569	31 December 2023 2022 8,591 6,477 (1,121) (1,418) 7,470 5,101 1,569 1,654	31 December 1 January 2023 2022 2022 8,591 6,477 5,112 (1,121) (1,418) (1,421) 7,470 5,101 3,691 1,569 1,654 1,688

The adjustments onto a regulatory basis represent assets inadmissible for regulatory reporting purposes.

5. Significant judgements and estimates

The key assumptions concerning the future and other key sources of estimation uncertainty at the reporting ^{IAS 1.125} date, that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year are discussed below. The Company based its assumptions and estimates on parameters available when the financial statements were prepared. Existing circumstances and assumptions about future developments, however, may change due to market changes or circumstances arising that are beyond the control of the Company. Such changes are reflected in the assumptions when they occur. The Company disaggregates information to disclose major product lines namely, marine, property, personal accident insurance and liability reinsurance issued. This disaggregation has been determined based on how the Company is managed.

5.1. Insurance and reinsurance contracts

The Company applies the PAA to simplify the measurement of insurance contracts. When measuring liabilities for remaining coverage, the PAA is broadly similar to the Company's previous accounting treatment under IFRS 4. However, when measuring liabilities for incurred claims, the Company now discounts cash flows that are expected to occur more than one year after the date on which the claims are incurred and includes an explicit risk adjustment for non-financial risk.

5.1.1. Liability for remaining coverage

Insurance acquisition cash flows

In the property insurance product line, the Company is eligible and chooses to recognise insurance acquisition cash flows as an expense immediately as incurred. This is because all insurance contracts issued within that product line have a coverage period of one year or less.

For personal accident insurance, marine insurance and liability reinsurance products, where groups are not eligible to recognise an expense immediately, insurance acquisition cash flows are allocated to related groups of insurance contracts recognised in the statement of financial position (including those groups that will include insurance contracts expected to arise from renewals). An asset for insurance acquisition cash flows is recognised for acquisition cash flows incurred before the related group of insurance contracts has been recognised.

The effect of electing to recognise insurance acquisition cash flows as an expense when incurred for a group of insurance contracts is to increase the liability for remaining coverage and reduce the likelihood of any subsequent onerous contract loss. There would be an increased charge to profit or loss on incurring the expense, offset by an increase in profit released over the coverage period.

IFRS 17.59(a)

5.1. Insurance and reinsurance contracts (continued)

Onerous groups

For groups of contracts that are onerous, the liability for remaining coverage is determined by the fulfilment cash flows. Any loss-recovery component is determined with reference to the loss component recognised on underlying contracts and the recovery expected on such claims from reinsurance contracts held.

Time value of money

For the marine and personal insurance product lines, the Company adjusts the carrying amount of the liability for remaining coverage to reflect the time value of money and the effect of financial risk using discount rates that reflect the characteristics of the cash flows of the group of insurance contracts at initial recognition.

5.1.2. Liability for incurred claims

The ultimate cost of outstanding claims is estimated by using a range of standard actuarial claims projection *IFRS 17.117(a)* techniques, such as Chain Ladder and Bornheutter-Ferguson methods.

The main assumption underlying these techniques is that a Company's past claims development experience can be used to project future claims development and hence ultimate claims costs. These methods extrapolate the development of paid and incurred losses, average costs per claim (including claims handling costs), and claim numbers based on the observed development of earlier years and expected loss ratios. Historical claims development is mainly analysed by accident years, but can also be further analysed by geographical area, as well as by significant business lines and claim types. Large claims are usually separately addressed, either by being reserved at the face value of loss adjuster estimates or separately projected in order to reflect their future development. In most cases, no explicit assumptions are made regarding future rates of claims inflation or loss ratios. Instead, the assumptions used are those implicit in the historical claims development data on which the projections are based. Additional qualitative judgement is used to assess the extent to which past trends may not apply in future, (e.g., to reflect one-off occurrences, changes in external or market factors such as public attitudes to claiming, economic conditions, levels of claims inflation, judicial decisions and legislation, as well as internal factors such as portfolio mix, policy features and claims handling procedures) in order to arrive at the estimated ultimate cost of claims that present the probability weighted expected value outcome from the range of possible outcomes, taking account of all the uncertainties involved.

Some of the insurance contracts that have been written in the property line of business permit the Company to sell property acquired in settling a claim. The Company also has the right to pursue third parties for payment of some or all costs. Estimates of salvage recoveries and subrogation reimbursements are considered as an allowance in the measurement of ultimate claims costs.

Other key circumstances affecting the reliability of assumptions include variation in interest rates, delays in settlement and changes in foreign currency exchange rates.

5.1.3. Discount rates

Insurance contract liabilities are calculated by discounting expected future cash flows at a risk free rate, plus an illiquidity premium where applicable. Risk free rates are determined by reference to the yields of highly liquid AAA-rated sovereign securities in the currency of the insurance contract liabilities. The illiquidity premium is determined by reference to observable market rates.

5 years 10 vears 1 year 3 vears 2023 2022 2022 2023 2022 2023 2023 2022 Personal accident. marine and property contracts issued EUR 0.8% 0.9% 1.0% 1.1% 1.3% 1.4% 1.6% 1.7% USD 2.3% 2.8% 2.1% 2.2% 2.4% 2.5% 2.6% 2.7% Liability reinsurance contracts issued 0.8% 0.9% 1.2% 1.5% 1.7% EUR 1.1% 1.4% 1.8% USD 2.1% 2.2% 2.4% 2.5% 2.6% 2.7% 2.8% 2.9%

Discount rates applied for discounting of future cash flows are listed below:

5.1. Insurance and reinsurance contracts (continued)

Commentary

IFRS 17.117(b) requires entities to disclose any changes in methods and processes for estimating inputs used to measure insurance contracts. The reason of the change and type of contracts affected should be disclosed. For example, an entity may have changes in approach used to estimate the yield curve due to more market data or information becoming available.

5.1.4. Risk adjustment for non-financial risk

- The risk adjustment for non-financial risk is the compensation that the Company requires for bearing the uncertainty about the amount and timing of the cash flows of groups of insurance contracts. The risk adjustment reflects an amount that an insurer would rationally pay to remove the uncertainty that future cash flows will exceed the expected value amount.
- The Company has estimated the risk adjustment using a confidence level (probability of sufficiency) approach at the 75th percentile. That is, the Company has assessed its indifference to uncertainty for all product lines (as an indication of the compensation that it requires for bearing non-financial risk) as being equivalent to the 75th percentile confidence level less the mean of an estimated probability distribution of the future cash flows. The Company has estimated the probability distribution of the future cash flows. The Company has estimated the probability distribution of the future cash flows.

Commentary

The above example assumes the confidence level approach has been adopted to determine the risk adjustment. Other approaches may be adopted (e.g., a cost of capital approach).

5.1.5. Assets for insurance acquisition cash flows

The Company applies judgement in determining the inputs used in the methodology to systematically and rationally allocate insurance acquisition cash flows to groups of insurance contracts. This includes judgements about the amounts allocated to insurance contracts expected to arise from renewals of existing insurance contracts in a group and the volume of expected renewals from new contracts issued in the period.

At the end of each reporting period, the Company revisits the assumptions made to allocate insurance acquisition *IFRS 17.B35B* cash flows to groups and where necessary revises the amounts of assets for insurance acquisition cash flows accordingly.

In the current year, the Company revisited its inputs into its allocation methodology for the marine insurance product line and reduced the expected number of renewal contracts expected to be included in groups starting in 2025 and 2026. As a result, the assets for insurance acquisition cash flows for those groups were reduced, and allocations to 2024 groups were increased by €4,000. This change in allocation did not have an impact on ^{IAS 8.39} current year profit or loss. In the prior year no changes were made.

Assets for insurance acquisition cash flows relating to the marine business were tested for impairment in the IFRS 17.28E current year and a loss of €19,000 was recognised. No impairment was recognised in the prior year.

In the current and prior year, for other product lines, the Company did not identify any facts and circumstances indicating that the assets may be impaired.

5.2. Financial assets

5.2.1. Impairment losses on financial assets

The measurement of impairment losses under IFRS 9 across relevant financial assets requires judgement, in particular, for the estimation of the amount and timing of future cash flows when determining impairment losses and the assessment of a significant increase in credit risk. These estimates are driven by the outcome of modelled ECL scenarios and the relevant inputs used.

6. Insurance service expense

The breakdown of insurance service expenses by major product lines is presented below:

				2023		
In €000		Personal			Liability	
		accident	Marine	Property	reinsurance	
	_	insurance	insurance	insurance	issued	Total
Incurred claims and other expenses	а	1,109	2,207	4,317	1,090	8,723
Amortisation of insurance acquisition cash flows	а	33	285	-	109	427
Losses on onerous contracts and reversals of those losses		_	(3)	-	-	(3)
Changes to liabilities for incurred claims		(27)	16	(122)	(8)	(141)
Impairment of assets for insurance acquisition cash flows Reversal of impairment		-	19	-	-	19
of assets for insurance acquisition cash flows		-	-	-	-	-
Insurance acquisition cash flows recognised when incurred		_	_	396	_	396
Total		1,115	2,524	4,591	1,191	9,421

			2022		
in €000	Personal accident insurance	Marine insurance	Property insurance	Liability reinsurance issued	Total
Incurred claims and a other expenses	1,115	2,158	4,265	1,232	8,773
Amortisation of a insurance acquisition cash flows	33	293	-	125	450
contracts and reversals of those losses Changes to liabilities for	-	17	-	-	17
incurred claims	(27)	63	(30)	6	12
Impairment of assets for insurance acquisition cash flows Reversal of impairment	-	-	-	-	-
of assets for insurance acquisition cash flows	-	-	-	-	-
Insurance acquisition cash flows recognised when incurred			391		391
Total	1,121	2,531	4,626	1,363	9,643

Notes:

a. The nature and amount of material expense included is disclosed in Note \underline{X} .

Commentary

Although the disclosure of insurance service expense is not required by IFRS 17, it could give valuable information on reconciliation of the amount in statement of profit or loss and roll-forward of net asset or liability components of insurance liabilities in accordance with IFRS 17.100.

For the property insurance portfolios, the Company made an accounting policy choice to recognise insurance acquisition cash flows as an expense when incurred. Therefore, insurance acquisition cash flows for the portfolios are not included in the roll forward in Note <u>11.1.3</u>, which is in line with Illustrative example 10 from *Illustrative Examples for IFRS 17 Insurance Contracts*.

IAS 1.97

7. Total investment income and net insurance financial result

The table below presents an analysis of total investment income and insurance finance result recognised in profit or loss and OCI in the period:

							IFRS 17.110
	2023						
	Insurance related			Non-			
n €000	Personal	Manina	Duenentur	Liability	insurance		
	accident	insurance	Property	reinsurance	relateu	Total	
Investment income	insulance	insulance	insulance	Issueu		TOLAI	-
Amounts recognised in the profit or loss							IEDE 7 20(6)
Interest revenue calculated using the	211				470	701	IFRS 7.20(D)
effective interest method	311	-	-	_	470	/01	
Net fois volve point ((lasses) on financial	-	152	146	60	-	358	IFRS 7.20(a)(i)
assets at fair value through profit or loss	-	43	55	6	-	104	
Net fair value gains/(losses) on derecognition							
of financial assets measured at fair value	-	-	-	-	6	6	
through other comprehensive income							
Impairment loss on financial assets	2	-	-	-	(7)	(5)	
Net foreign exchange income/(expenses)		8				8	
lotal amounts recognised in the profit or loss	313	203	201	66	469	1,252	
Amounts recognised in OCI	70	-	-	-	108	178	
Total investment income	383	203	201	66	577	1,430	
Insurance finance income/(expenses) from							
insurance contracts issued							
Interest accreted to insurance contracts using	-	(78)	-	(19)	-	(97)	
Interest accreted to insurance contracts using							
locked-in rate	(162)	-	-	-	-	(162)	
Due to changes in interest rates and other	(13)	_	_	_	_	(13)	
financial assumptions	(15)					(13)	
Net foreign exchange income/(expenses)		(6)				(6)	
from insurance finance income/(expenses)	(175)	(84)		(19)		(278)	
Represented by:							
Amounts recognised in profit or loss	(162)	(84)	-	(19)	-	(265)	
Amounts recognised in OCI	(13)	-			-	(13)	
Reinsurance finance income/(expenses)							
from reinsurance contracts held							
using current financial assumptions	-	31	-	-	-	31	
Changes in non-performance risk of							
reinsurer	-	-	-	-	-	-	
Net foreign exchange income/(expense)		5				5	
Reinsurance finance income/(expenses)	-	36	-	-	-	36	
from reinsurance contracts held							
Amounts recognised in profit or loss	_	36	_	_	_	36	
Amounts recognised in OCI		_				-	
Total net investment income, insurance							
finance expenses and reinsurance finance	208	155	201	47	577	1,188	
income							
Represented by:	1 - 1	166	201	17	160	1 0 2 2	
Amounts recognised in profit of loss	101 57	- 22	201	41 -	407 108	165	
	JI				100	100	

7. Total investment income and net insurance financial result (continued)

	2022						
	Insurance related Non-						•
In €000	Personal			Liability	insurance		
	accident	Marine	Property	reinsurance	related		
	insurance	insurance	insurance	issued		Total	
Investment income							
Amounts recognised in the profit or loss							
effective interest method	357	-	-	-	287	644	IFRS 7.20(b)
Other interest and similar income	-	146	131	57	-	334	
Net fair value gains/(losses) on financial	_	(7)	(3)	(4)	_	(14)	IFRS 7 20(a)(i)
assets at fair value through profit or loss		(1)	(3)	()			
Net fair value gains/(losses) on derecognition							
through other comprehensive income	-	-	-	-	-	-	
Impairment loss on financial assets	(1)	-	-	_	(1)	(2)	
Net foreign exchange income/(expenses)	-	(35)	-	-	-	(35)	
Total amounts recognised in the profit or							
loss	356	104	128	53	286	927	
Amounts recognised in OCI	(21)				(12)	(33)	
Total investment income	335	104	128	53	274	894	
Insurance finance income/(expenses) from							
insurance contracts issued							
current financial assumptions	-	(68)	-	(17)	-	(85)	
Interest accreted to insurance contracts using							
locked-in rate	(184)	-	-	-	-	(184)	
Due to changes in interest rates and other	1	-	_	_	_	1	
financial assumptions	-					-	
Net foreign exchange income/(expenses)	-	32	-	-	-	32	
from insurance finance income/(expenses)	(180)	(36)		(17)	-	(233)	
Represented by:							
Amounts recognised in profit or loss	(184)	(36)	-	(17)	-	(237)	
Amounts recognised in OCI	4	-	-	_	-	4	
Reinsurance finance income/(expenses)							
from reinsurance contracts held							
Interest accreted to reinsurance contracts	-	35	-	-	-	35	
Changes in non-performance risk of							
reinsurer	-	(1)	-	-	-	(1)	
Net foreign exchange income/(expense)	-	(25)	-	_	-	(25)	
Reinsurance finance income/(expenses)						0	
from reinsurance contracts held							
Represented by:							
Amounts recognised in profit or loss	-	9	-	-	-	9	
Amounts recognised in OCI						-	
I otal net investment income, insurance	166	77	120	36	274	670	
income	100	11	120	20	214	0/0	
Represented by:							
Amounts recognised in profit or loss	172	77	128	36	286	699	
Amounts recognised in OCI	(17)	-	-	-	(12)	(29)	

The Company does not have any gains or losses arising from the derecognition of financial assets measured at amortised cost.

IFRS 7.20(a)(vi), IFRS 7.20A

7. Total investment income and net insurance financial result (continued)

Commentary

The Company has disclosed finance income and expenses and the investment return on its assets in a tabular format. IFRS 17 does not require this level of detail; entities may provide qualitative notes disclosures as opposed to a detailed table to cover the requirement in IFRS 17.110 to explain the relationship between insurance finance income or expenses and the investment return on assets.

IFRS 7.20(a)(i)

IFRS 7.20(a)(i) requires an entity to disclose separately gains and losses on financial assets designated FVPL upon initial recognition or subsequently and gains or losses on financial assets that are mandatorily measured at FVPL in accordance with IFRS 9. The illustrative example above contains only financial assets that are mandatorily measured at FVPL, therefore, a separate line was not required.

IFRS 17 requires insurers to account for and disclose the changes in the risk adjustment for non-performance of a reinsurer in respect of reinsurance contracts held in the notes to the financial statements. The Company defines credit risk as a financial risk as per Appendix A of IFRS 17. As such, the Company has chosen to disclose, the effects of non-performance for reinsurance held as part of finance costs under a separate line item. Entities may choose to present and disclose this in another section depending on their interpretation of the standard.

The breakdown of the assets by related insurance product line is presented below:

	2023						
		Insuran	Non-				
In €000	Personal			Liability	insurance		
	accident	Marine	Property	reinsurance	related		
	insurance	insurance	insurance	issued		Total	
Equity and debt instruments at fair value through profit or loss Debt instruments at fair value	-	2,709	2,804	1,084	_	6,597	
through other comprehensive income	5,695	-	-	-	5,661	11,356	
Debt instruments at amortised cost	-	-	-	-	1,036	1,036	
Total	5,695	2,709	2,804	1,084	6,697	18,989	

			20	22		
		Insuran	Non-	Total		
In €000	Personal	Marine	Property	Liability	insurance related	
	insurance	insurance	insurance	issued	related	
Equity and debt instruments at fair value through profit or loss Debt instruments at fair value	-	2,021	2,413	1,018	-	5,452
through other comprehensive income	6,433	-	-	-	4,255	10,688
Debt instruments at amortised cost	-	-	-	-	987	987
Total	6,433	2,021	2,413	1,018	5,242	17,127

The Company manages separate asset portfolios to support the insurance contracts issued in each major product line.

Commentary

The above breakdown has been included to provide further insights for users of this publication. It is not a specific requirement of any standard, and it may or may not be relevant to an entity depending on how assets and liability portfolios are managed.

8. Equity and debt instruments at fair value through profit or loss

The breakdown of financial assets measured at FVPL is, as follows:

	31 De	ecember	1 January	IFRS 7.8
In €000	2023	2022	2022	
Fair value (mandatory)				
Equity securities	507	902	746	
Government debt instruments				
Euroland	3,572	3,141	2,603	
Other debt instruments				
Financial institutions	1,568	1,024	771	
Non-financial institutions	950	385	397	
Total other debt instruments	2,518	1,409	1,168	
Total equity and debt instruments at FVPL	6,597	5,452	4,517	

9. Debt instruments measured at fair value through other comprehensive income

The breakdown of debt instruments measured at FVOCI is, as follows. For information relating to impairment refer to note 3.2.4.4.1.

31 De	1 January	IFRS 7.8	
2023	2022	2022	
6,086	5,729	5,106	
	·		
3,311	3,116	2,777	
1,959	1,843	1,643	
5,269	4,959	4,420	
11,356	10,688	9,526	
	31 De 2023 6,086 3,311 1,959 5,269 11,356	31 December 2023 2022 6,086 5,729 3,311 3,116 1,959 1,843 5,269 4,959 11,356 10,688	31 December 1 January 2023 2022 2022 6,086 5,729 5,106 3,311 3,116 2,777 1,959 1,843 1,643 5,269 4,959 4,420 11,356 10,688 9,526

The loss allowance for debt investments at FVOCI of 62,000 (2022: 61,000) does not reduce the carrying amount ^{IFRS 7.16A} of these investments (which are measured at fair value), but gives rise to an equal and opposite gain in OCI.

10. Debt instruments measured at amortised cost

The breakdown of debt instruments measured at amortised cost is, as follows. For information relating to impairment refer to note 3.2.4.4.2.

31 Decer	1 January		
2023	2022	2022	IFRS 7.8
1,036	987	940	
1,036	987	940	
	31 Decer 2023	31 December 2023 2022 1,036 987 1,036 987	31 December 1 January 2023 2022 2022 1,036 987 940 1,036 987 940

11. Insurance and reinsurance contracts

The breakdown of groups of insurance and reinsurance contracts issued, and reinsurance contracts held, that are in an asset position and those in a liability position is set out in the table below:

		2023			2022		
In €000	Assets	Liabilities	Net	Assets	Liabilities	Net	IFRS 17.78
Insurance contracts issued							
Personal accident insurance	-	5,079	5,079	-	6,324	6,324	
Marine insurance	-	4,005	4,005	-	3,830	3,830	
Property insurance	-	2,887	2,887	-	2,379	2,379	
Liability reinsurance issued	(35)	1,033	998	(49)	1,056	1,007	
Total insurance contracts issued	(35)	13,004	12,969	(49)	13,589	13,540	
Reinsurance contracts held							
Marine insurance	(808)	-	(808)	(1,408)	-	(1,408)	
Total reinsurance contracts held	(808)	_	(808)	(1,408)		(1,408)	

11.1. Roll-forward of net asset or liability for insurance contracts issued showing the liability for remaining coverage and the liability for incurred claims

The Company disaggregates information to provide disclosure in respect of major product lines separately: personal accident insurance, marine insurance, property insurance and liability reinsurance issued. This disaggregation has been determined based on how the company is managed.

Commentary

IFRS 17.95 requires entities to aggregate or disaggregate information so that useful information is not obscured either by the inclusion of a large amount of insignificant detail or by the aggregation of items that have different characteristics. Entities need to apply judgement as to how, or even whether, they break down the required disclosures into separate lines of business or geographical areas. Examples of aggregation bases that might be appropriate for information disclosed about insurance contracts are listed by IFRS 17.96, as follows:

(a) Type of contract (for example, major product lines);

(b) Geographical area (for example, country or region); or

(c) Reportable segment, as defined in IFRS 8 Operating Segments.

Entities are not required to disaggregate information as disclosed in this publication but they need to apply judgement to aggregate or disaggregate information so that useful information is not obscured either by the inclusion of a large amount of insignificant detail or by the aggregation of items that have different characteristics. Once the decision for appropriate level of disaggregation is made, that IFRS 17 disclosures need to be provided separately for each unit of aggregation.

11.1. Roll-forward of net asset or liability for insurance contracts issued showing the liability for remaining coverage and the liability for incurred claims (continued)

11.1.1. Personal accident insurance

The roll-forward of the net asset or liability for insurance contracts issued, showing the liability for remaining coverage and the liability for incurred claims for personal accident insurance product line, is disclosed in the table below:

				2023			
	Liabilities for rema	aining coverage	Liabilities for in	ncurred claims	Assets for insurance	Total	IFRS 17.100(a(-(c), IFRS 17.105A, B
In €000	Excluding loss component	Loss component	Estimates of the present value of future cash flows	Risk adjustment	acquisition cash flows		
Insurance contract liabilities as at 01/01	5,561	-	858	22	(117)	6,324	IFRS 17.99(b)
Insurance contract assets as at 01/01							IFRS 17.99(b)
Net insurance contract (assets)/liabilities as at 01/01	5,561		858	22	(117)	6,324	
Insurance revenue	(1,555)	-	-	-		(1,555)	IFRS 17.103(a)
Incurred claims and other	33	-	1,082	-	-	1,115	IFRS 17.103(b)(i)
expenses	-	-	1,082	27	-	1,109	IEPS 17 103(bYii)
acquisition cash flows	a 33	-	-	-	-	33	IFRS 17.105(D(II)
Losses on onerous contracts and reversals of those losses	-	-	-	-	-	-	IFRS 17.103(b)(iii)
Changes to liabilities for incurred claims	-	-	-	(27)	-	(27)	IFRS 17.103(b)(iv)
insurance acquisition cash flow	-	-	-	-	-	-	IFRS 17.105A, B
Reversal of impairment of assets for insurance acquisition cash flows	-	-	-	-	-	-	IFRS 17.105A, B
Investment components	-	-	-	-	-	-	IFRS 17.103(c)
Insurance service result	(1,522)	-	1,082	-	-	(440)	
Insurance finance	^D 128	-	47	-	-	175	
Effect of movements in exchange rates							IFRS 17.105(d)
Total changes in the							
statement of	(1,394)		1,129			(265)	
comprehensive income Cash flows							IFRS 17.105(a)
Premiums received/ Claims and other expenses	c 142	-	-	-	-	142	IFRS 17.105(a)(i) IFRS 17.105(a)(iii)
paid	-	-	(1,118)	-	-	(1,118)	
flows	d _	-	-	-	(4)	(4)	IFRS 17.105(a)(ii)
Total cash flows	142	-	(1,118)	-	(4)	(980)	
Allocation from assets for insurance acquisition cash flows to groups of insurance contracts	(43)	-	-	-	43	-	
Other movements	e						IFRS 17.105(d)
Net insurance contract (assets)/liabilities as at	4,266		869	22	(78)	5,079	
Insurance contract liabilities as at 31/12	4,188	-	869	22	(78)	5,079	IFRS 17.99(b)
Insurance contract assets as at 31/12							IFRS 17.99(b)
Net insurance contract (assets)/liabilities as at 31/12	4,266		869	22	(78)	5,079	

11.1. Roll-forward of net asset or liability for insurance contracts issued showing the liability for remaining coverage and the liability for incurred claims (continued)

		2022										
	_	Liabilities for rem	aining coverage	Liabilities for inc	urred claims	Assets for	Total	IFRS 17.100(a)-(c)				
In €000	_	Excluding loss component	Loss component	Estimates of the present value of future cash flows	Risk adjustment	insurance acquisition cash flows		IFRS 17.105A, B				
Insurance contract		6,608	_	866	22	(83)	7.413	IFRS 17.99(b)				
Inabilities as at 01/01 Insurance contract assets as at 01/01	_				-		_	IFRS 17.99(b)				
Net insurance contract												
(assets)/liabilities as at 01/01	-	6,608		866	22	(83)	7,413					
Insurance revenue Insurance service expenses		(1,583) 33	-	- 1.088	-	-	(1,583) 1,121	IFRS 17.103(a)				
Incurred claims and other expenses		-	-	1,088	27	-	1,115	IFRS 17.103(b)(i)				
Amortisation of insurance acquisition	а	33	-	-	-	-	33	IFRS 17.103(bXii)				
cash flows Losses on onerous contracts and reversals		-	-	-	_	-	_	IFRS 17.103(b)(iv)				
of those losses Changes to liabilities for		-	-	-	(27)	_	(27)	IFRS 17.103(b)(iii)				
Impairment of assets for insurance acquisition		-	-	-	-	-	_	IFRS 17.105A, B				
cash flows Reversal of impairment of assets for insurance		_	-	-	-	-	_	IFRS 17.105A, B				
acquisition cash flows Investment components		-	-	-	-		-	IFRS 17.103(c)				
Insurance service result Insurance finance	b	(1,550)	-	1,088 25	-	-	(462)					
expenses Effect of movements in			_		-	_	-	IFRS 17.105(d)				
exchange rates Total changes in the	-	(1.204)		1 112			(201)					
comprehensive income	-	(1,394)		1,113			(281)	IEPS 17 105(2)				
Premiums received	с	424	-	-	-	-	424	IFRS 17.105(a) IFRS 17.105(a)(i) IFRS 17 105(a)(iii)				
paid	Ь	-	-	(1,121)	-	-	(1,121)	IFRS 17 105(a)(ii)				
flows	ŭ	(18) 406	-	- (1 121)	-	(85) (85)	(103)	IFRS 17.105A				
Allocation from assets for insurance acquisition cash flows to groups of		(59)	-	-	-	59	-	IFRS 17.105A				
insurance contracts Other movements	e	-	-	-	-	(8)	(8)	IFRS 17.105(d)				
Net insurance contract (assets)/liabilities as at	-	5,561		858	22	(117)	6,324					
Insurance contract liabilities as at 31/12		5,561	_	858	22	(117)	6,324	IFRS 17.99(b)				
Insurance contract assets as at 31/12	-	_						IFRS 17.99(b)				
Net insurance contract (assets)/liabilities as at	=	5,561		858	22	(117)	6,324					

11.1. Roll-forward of net asset or liability for insurance contracts issued showing the liability for remaining coverage and the liability for incurred claims (continued)

Notes:

- a. Insurance acquisition cash flows were allocated on a straight-line basis during the coverage period of the respective group of contracts. Please see extracts from accounting policy for details on Note 2.2.5.5.
- b. The Company has made an accounting policy choice for the product line to disaggregate insurance finance expense between profit or loss and other comprehensive income. Please refer to Note 2.2.6.4 for details.
- c. Any refunds of premiums have been included in this line.
- d. Insurance acquisition cash flows paid after the related group is initially recognised are adjusted to the liability for remaining coverage. Insurance acquisition cash flows paid before the related group is recognised are included in assets for acquisition cash flows until the group is recognised.
- e. Other movements for acquisition cash flows include where a liability for insurance acquisition cash flows has been recognised when applying another IFRS standard.

Commentary

IFRS 17.100 requires entities to disclose movements in insurance contract liabilities and assets to show separately changes in liabilities for remaining coverage, loss component and liabilities for incurred claims. For insurance contracts to which the PAA approach has been applied, an entity should also disclose separately estimates of the present value of future cash flows and risk adjustment making up the liability for incurred claims. The movements are to be disclosed according to IFRS 17.103 and IFRS 17.105, and comprise amounts recognised in profit or loss and cash flows.

The roll-forward above includes the reconciliation from opening to closing balance in respect of assets for insurance acquisition cash flows required by IFRS 17 paragraphs 105A and 105B. An entity may choose to exclude this reconciliation from this table and present it as a separate roll-forward elsewhere. .

The standard is silent on whether an entity should accrete interest on assets for insurance acquisition cash flows, as a result, entities have an accounting policy choice in this regard. In these disclosures, the Company has chosen to not accrete interest on assets for insurance acquisition cash flows.

Insurance revenue comprises the allocation of premiums to profit or loss on the basis of the passage of time or on ^{IFRS 17.B126} the basis of the expected timing of incurred insurance service expenses. In the illustrative disclosures, allocation based on the passage of time was used.

Insurance claims and other expenses are represented by expected cash outflows on insurance events that have occurred.

Refunds of premiums have been included in the cash flow line for premiums received. An entity may also choose IFRS 17.103(c) to include refunds of premiums together with investment components.

Changes to liabilities for incurred claims show changes in expected cash flows for insured events that have occurred and release of the risk adjustment.

Insurance finance expenses comprises accrual of interest on the net insurance liabilities. The change in discount rates is allocated to other comprehensive income for this product line. The contracts have a significant finance component which is incorporated into liability for remaining coverage.

Roll-forward of net asset or liability for insurance contracts issued showing the liability for remaining 11.1. coverage and the liability for incurred claims (continued)

The expected timing of when assets for insurance acquisition cash flows will be derecognised and included in the measurement of the group of insurance contracts to which they are allocated is disclosed in the table below:

				2025			
In €000	Up to 1	1-2 years	2-2 voars	2-4 years	4-E voars	N5 years	Total
Expected timing of	year		2-5 years	5-4 years	4-5 years	>5 years	TOLAI
assets balance as at 31/12	38	22	10	6	2		78
				2022			
In €000	Up to 1						
	year	1-2 years	2-3 years	3-4 years	4-5 years	>5 years	Total
Expected timing of derecognition of assets balance as at	43	36	20	12	6		117
31/12							

Commentary

The above disclosure reflects to requirement to disclose quantitative information in appropriate time bands around when the Company expects to derecognise an asset for insurance acquisition cash flows. The Company considers the above time bands to be appropriate in respect of its products, however. entities should consider which is most appropriate to their business.

IFRS 17.28C, IFRS 17.109A

2022

11.1. Roll-forward of net asset or liability for insurance contracts issued showing the liability for remaining coverage and the liability for incurred claims (continued)

11.1.2. Marine insurance

The roll-forward of the net asset or liability for insurance contracts issued, showing the liability for remaining coverage and the liability for incurred claims for marine insurance product line, is disclosed in the table below: 2023

		Liabilities for	remaining	Liabilities for ine	curred claims	Assets for	IFRS 17.100(a)-(c) IFRS 17.105A, B	
In €000	_	Excluding loss component	Loss component	Estimates of the present value of future cash flows	Risk adjustment	acquisition cash flows		
Insurance contract liabilities as at 01/01		2,071	17	2,099	49	(406)	3,830	IFRS 17.99(b)
Insurance contract assets as at 01/01	_		_	_	_		-	IFRS 17.99(b)
Net insurance contract		2 074		2 000	40	(100)	2 0 2 0	
(assets)/liabilities as at 01/01	-	2,071	17	2,099	49	(406)	3,830	
Insurance revenue		(3,012)	-	-	-	-	(3,012)	IFRS 17.103(a)
Insurance service expenses		285	(17)	2,216	21	19	2,524	
Incurred claims and other expenses		-	(14)	2,166	55	-	2,207	IFRS 17.103(b)(i)
Amortisation of insurance acquisition cash flows	а	285	-	-	-	-	285	IFRS 17.103(b)(ii)
Losses on onerous contracts and reversals of those losses		-	(3)	-	-	-	(3)	IFRS 17.103(b)(iv)
Changes to liabilities for incurred claims		-	-	50	(34)	-	16	IFRS 17.103(b)(iii)
Impairment of assets for insurance acquisition cash flows		-	-	-	-	19	19	IFRS 17.105A, B
for insurance acquisition cash flows		-	-	-	-	-	-	IFRS 17.105A, B
Investment components		-	-	-	-	-	-	IFRS 17.103(c)
Insurance service result		(2,727)	(17)	2,216	21	19	(488)	
Insurance finance expenses	b	16	_	62	-	-	78	IFRS 17.105(c)
Effect of movements in exchange rates	_	4	_	2			6	IFRS 17.105(d)
Total changes in the statement of comprehensive income	_	(2,707)	(17)	2,280	21	19	(404)	
Cash flows								IFRS 17.105(a)
Premiums received	С	2,410	-	- (1 500)	-	-	2,410	IFRS 17.105(a)(i)
losurance acquisition cash flows		-	-	(1,599)	-	-	(1,599)	IFRS 17.105(d)(III)
insurance acquisition cash nows		(85)	-	-	-	(147)	(232)	IFRS 17.105(a)(II)
Total cash flows		2,325	-	(1,599)	-	(147)	579	
Allocation from assets for								IFRS 17.105A
insurance acquisition cash flows to groups of insurance contracts		(131)	-	-	-	131	-	
Other movements	_			_	-			IFRS 17.105(d)
Net insurance contract (assets)/liabilities as at 31/12	_	1,558		2,780	70	(405)	4,005	
Insurance contract liabilities as at 31/12		1,558	-	2,780	70	(403)	4,005	IFRS 17.99(b)
Insurance contract assets as at 31/12	_							IFRS 17.99(b)
Net insurance contract (assets)/liabilities as at 31/12	_	1,558	-	2,780	70	(403)	4,005	

11.1. Roll-forward of net asset or liability for insurance contracts issued showing the liability for remaining coverage and the liability for incurred claims (continued)

				2022	2			
		Liabilities for r covera	emaining ge	Liabilities for inc	urred claims	Assets for insurance	Total	IFRS 17.100(a)-(c) IFRS 17.105A, B
In €000		Excluding loss component	Loss component	Estimates of the present value of future cash flows	Risk adjustment	acquisition cash flows		
Insurance contract liabilities as at		2,061	-	1,183	29	(297)	2,976	IFRS 17.99(b)
Insurance contract assets as at 01/01							-	IFRS 17.99(b)
Net insurance contract		2 061	_	1 183	29	(297)	2 976	
(assets)/liabilities as at 01/01		2,001		1,105		(2)1)	2,510	
Insurance revenue		(2,800)	-	-	-	-	(2,800)	IFRS 17.103(a)
Insurance service expenses		293	17	2,201	20	-	2,531	
		-	-	2,104	54	-	2,158	IFRS 17.103(D)(I)
Amortisation of insurance acquisition cash flows	а	293	-	-	_	-	293	IFRS 17.103(b)(ii)
Losses on onerous contracts and reversals of those losses		-	17	-	-	-	17	IFRS 17.103(b)(iv)
Changes to liabilities for incurred		-	-	97	(34)	-	63	IFRS 17.103(b)(iii)
Impairment of assets for		-	_	-	-	-	_	IFRS 17.105A, B
Reversal of impairment of assets for insurance acquisition cash flows		-	-	-	-	-	-	IFRS 17.105A, B
Investment components		-	-	-	-	-	-	IFRS 17.103(c)
Insurance service result		(2,507)	17	2,201	20	-	(269)	
Insurance finance expenses	b	35	-	33	-	-	68	IFRS 17.105(c)
Effect of movements in exchange rates		(25)		(7)			(32)	IFRS 17.105(d)
Total changes in the statement of comprehensive income		(2,497)	17	2,227	20		(233)	
Cash flows								IFRS 17.105(a)
Premiums received	С	2,768	-	-	-	-	2,768	IFRS 17.105(a)(i)
Insurance acquisition cash flows			_	(1,511)	_		(1,511)	IFRS 17.105(a)(ii)
		(146)	-	-	-	(224)	(370)	IFRS 17.105A
Total cash flows		2,622	-	(1,311)	-	(224)	1,087	
Allocation from assets for insurance acquisition cash flows to		(115)	-	-	-	115	-	IFRS 17.105A
Other movements		-	_	-	_	_	-	
Net insurance contract			·					IFRS 17.105(0)
(assets)/liabilities as at 31/12		2,071	17	2,099	49	(406)	3,830	
Insurance contract liabilities as at 31/12		2,071	17	2,099	49	(406)	3,830	IFRS 17.99(b)
Insurance contract assets as at 31/12							-	IFRS 17.99(b)
Net insurance contract (assets)/liabilities as at 31/12		2,071	17	2,099	49	(406)	3,830	

11.1. Roll-forward of net asset or liability for insurance contracts issued showing the liability for remaining coverage and the liability for incurred claims (*continued*)

Notes:

- a. Insurance acquisition cash flows were allocated on a straight-line basis during the coverage period of the respective group of contracts. Please see extracts from the accounting policy for details on Note 2.2.5.5.
- b. The Company has made an accounting policy choice for the product line to recognise net insurance finance expense in profit or loss only. Please refer to Note <u>2.2.6.4</u>. for details.
- c. Any refunds of premiums have been included in this line.

Commentary

Losses on onerous contracts are represented by the loss component recognised and partly reversed. In 2022, loss was recognised for one of the groups of contracts (group A) as it became onerous. In 2023, the insured event occurred, and the loss component was partly transferred to liability for incurred claims, the remaining part of the loss was reversed.

Insurance finance expenses comprise the accrual of interest on net insurance liabilities. The contracts are long term and have a significant finance component which is incorporated into liability for remaining coverage.

In the illustrative example above, several groups of contracts were issued in US dollars. The effect of changes in the exchange rate is reflected in the line "Effect of movements in exchange rates". For the purpose of the example, we calculated figures in USD and then translated to EUR.

				2023			
In €000	Up to 1						
	year	1-2 years	2-3 years	3-4 years	4-5 years	>5 years	Total
Expected timing of derecognition of							
accets balance as at	121	102	80	61	39		403
31/12							
				2022			
In €000	Up to 1						
	year	1-2 years	2-3 years	3-4 years	4-5 years	>5 years	Total
Expected timing of							
derecognition of	131	100	82	59	34		406
assets balance as at 31/12							

The expected timing for when assets for insurance acquisition cash flows will be derecognised and included in the measurement of the group of insurance contracts to which they relate is disclosed in the table below:

2022

IFRS 17.56

11.1. Roll-forward of net asset or liability for insurance contracts issued showing the liability for remaining coverage and the liability for incurred claims (continued)

11.1.3. Property insurance

The roll-forward of the net asset or liability for insurance contracts issued, showing the liability for remaining coverage and the liability for incurred claims for the property insurance product line, is disclosed in the table below. The Company has made an accounting policy choice for the product line to expense acquisition cash flows as they arise. Please see extracts from the accounting policy for details on Note $\underline{2}$.

				2023			
		Liabilities for	remaining	Liabilities for	r incurred	Total	IFRS 17.100(a)-(c)
		covera	age	claim	IS		
In €000				Estimates of			
		Excluding		the present			
		loss	Loss	value of future	Risk		
		component	component	cash flows	adjustment		
Insurance contract liabilities as at 01/01		392	-	1,942	45	2,379	IFRS 17.99(b)
Insurance contract assets as at 01/01	_		-				IFRS 17.99(b)
Net insurance contract		392	-	1.942	45	2,379	
(assets)/liabilities as at 01/01	_						(FDC 17 102(-)
Insurance revenue		(5,245)	-	-	-	(5,245)	IFRS 17.103(a)
Insurance service expenses		-	-	4,175	20	4,195	
incurred claims and other expenses		_	-	4,212	105	4,317	IFRS 17.103(D)(I)
Losses on onerous contracts and reversals of those losses		-	-	-	-	-	IFRS 17.103(b)(iv)
Changes to liabilities for incurred claims		-	-	(37)	(85)	(122)	IFRS 17.103(b)(iii)
Investment components		-	-	-	-	-	IFRS 17.103(c)
Insurance service result		(5,245)	-	4,175	20	(1,050)	
Insurance finance expenses	а	-	-	-	-	-	
Effect of movements in exchange rates	_	_	_				IFRS 17.105(d)
Total changes in the statement of comprehensive income	_	(5,245)	_	4,175	20	(1,050)	
Cash flows							IFRS 17.105(a)
Premiums received	b	4,946	-	-	-	4,946	IFRS 17.105(a)(i)
Claims and other expenses paid		-	-	(3,388)	-	(3,388)	IFRS 17.105(a)(iii)
Insurance acquisition cash flows		-	-	-	-	-	IFRS 17.105(a)(ii)
Total cash flows		4,946	-	(3,388)	-	1,558	
Other movements		-	-	-	-	-	IFRS 17.105(d)
Net insurance contract (assets)/liabilities as at 31/12	_	93	-	2,729	65	2,887	
Insurance contract liabilities as at 31/12		93	-	2,729	65	2,887	IFRS 17.99(b)
Insurance contract assets as at 31/12	_		_			-	IFRS 17.99(b)
Net insurance contract (assets)/liabilities as at 31/12	=	93	_	2,729	65	2,887	

11.1. Roll-forward of net asset or liability for insurance contracts issued showing the liability for remaining coverage and the liability for incurred claims (continued)

			2022			
_	Liabilities for	remaining	Liabilities for	r incurred	Total	IFRS 17.100(a)-(c)
	cover	age	claim	าร		
_			Estimates of			
	Excluding		the present			
	loss	Loss	value of future	Risk		
	component	component	cash flows	adjustment		_
	681	-	1,665	40	2,386	IFRS 17.99(b)
_		-				IFRS 17.99(b)
	681	-	1,665	40	2,386	
_	(5.100)				(5.1.02)	
	(5,182)	-	-	-	(5,182)	IFRS 17.103(a)
	-	-	4,230	5	4,235	
	-	-	4,161	104	4,265	IFRS 17.103(D)(I)
	-	-	-	-	-	IFRS 17.103(b)(iv
	-	-	69	(99)	(30)	IFRS 17.103(b)(iii)
	-	-	-	-	-	IFRS 17.103(c)
	(5,182)	-	4,230	5	(947)	
а	_	-	-	-	_	IFRS 17.105(c)
	_	_	_	_	_	IFRS 17.105(d)
-						
_	(5,182)	_	4,230	5	(947)	
						IFRS 17.105(a)
b	4,893	-	-	-	4,893	IFRS 17.105(a)(i)
	-	-	(3,953)	-	(3,953)	IFRS 17.105(a)(iii)
	-	-	-	-	-	IFRS 17.105(a)(ii)
	4,893	-	(3,953)	-	940	
	-	-	-	-	-	IFRS 17.105(d)
_	392	-	1,942	45	2,379	
	392	-	1,942	45	2,379	IFRS 17.99(b)
_		_				IFRS 17.99(b)
_	392	-	1,942	45	2,379	
	- - - - - - -	Liabilities for cover Excluding loss component 681 - - 681 (5,182) - - - (5,182) a - (5,182) a - - (5,182) b 4,893 - - 4,893 - - - 4,893 - - - 392 - 392	Liabilities for remaining coverage Excluding loss Loss component component 681 - - - 681 - 681 - (5,182) - - - (5,182) - - - - - (5,182) - - - - - (5,182) - - - - - (5,182) - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - 392	Liabilities for remaining coverage Liabilities for claim Excluding loss Estimates of the present component component 681 - 681 - 681 - 681 - 681 - 681 - 681 - 681 - 681 - 681 - 681 - 681 - 7 - 681 - 7 - 681 - 7 - 681 - 7 - 681 - 7 - 681 - 681 - 681 - 681 - 681 - 681 - 69 - 61 - 61 -	Liabilities for remaining coverage Liabilities for incurred claims Excluding loss Loss value of future Risk adjustment 681 - 1,665 40 - - - - 681 - 1,665 40 - - - - 681 - 1,665 40 - - - - 681 - 1,665 40 (5,182) - - - - - 4,230 5 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - <	Liabilities for remaining coverage Liabilities for incurred claims Total Excluding tops Estimates of the present Total 681 - 1,665 40 2,386 681 - 1,665 40 2,386 681 - 1,665 40 2,386 (5,182) - - - - 681 - 1,665 40 2,386 (5,182) - - - (5,182) - - 4,230 5 4,235 - - 4,161 104 4,265 - - - - - - - 69 (99) (30) - - - - - - - - - - - - - - - - - - - - - - - - -

Notes:

a. The Company is not required to adjust future cash flows in liability for incurred claims for the time value of money and the effect of financial risk as, for the product line, those cash flows are expected to be paid in less than one year. Please refer to Note <u>2.2.5.3.</u> for details.

IFRS 17.59(a)

IFRS 17.59(b)

b. Any refunds of premiums have been included in this line.

Commentary

An entity may choose to recognise insurance acquisition cash flows as expense when they occurred only if the $_{IFRS 17.59(a)}$ coverage period is less than one year.

11.1. Roll-forward of net asset or liability for insurance contracts issued showing the liability for remaining coverage and the liability for incurred claims (continued)

11.1.4. Liability reinsurance issued

The roll-forward of the net asset or liability for insurance contracts issued, showing the liability for remaining coverage and the liability for incurred claims for liability insurance (reinsurance issued) product line, is disclosed in the table below:

		2023									
	-	Liabilities for covera	remaining age	Liabilities for incu	urred claims	Assets for insurance	Total	IFRS 17.100(a)-(c, IFRS 17.105A, B			
In €000		Excluding loss component	Loss	Estimates of the present value of future cash flows	Risk adjustment	acquisition cash flows					
Insurance contract liabilities as at 01/01	-	605	-	480	12	(41)	1,056	IFRS 17.99(b)			
Insurance contract assets as at $01/01$		(49)	-		-		(49)	IFRS 17.99(b)			
Net insurance contract (assets)/liabilities as at		556	-	480	12	(41)	1,007				
		(1.017)	_	_	_		(1.017)	IERS 17 103(a)			
Insurance service expenses		109	_	1 083	(1)	_	1 191	1113 17.103(d)			
Incurred claims and other expenses		-	-	1,063	27	-	1,090	IFRS 17.103(b)(i)			
Amortisation of insurance acquisition cash flows	а	109	-	-	-	-	109	IFRS 17.103(b)(ii)			
Losses on onerous contracts and reversals of those losses		-	-	-	-	-	-	IFRS 17.103(D)(IV)			
Changes to liabilities for incurred claims		-	-	20	(28)	-	(8)	IFRS 17.103(b)(iii)			
Impairment of assets for insurance acquisition cash flows		-	-	-	-	-	-	IFRS 17.105A, B			
Reversal of impairment of assets for insurance		-	-	-	-	-	-	IFRS 17.105A, B			
acquisition cash flows		(74)	_	74	_	_	_	IEPS 17 103(c)			
		(982)	-	1 157	(1)	_	174	111317.105(0)			
Insurance finance expenses	b	-	-	19	-	_	19	IFRS 17 105(c)			
Effect of movements in								IFRS 17 105(d)			
exchange rates								//////////////////////////////////////			
Total changes in the statement of comprehensive		(982)	-	1,176	(1)		193				
Cash flows								IFRS 17.105(a)			
Premiums received	с	1,068	-	-	-	-	1,068	IFRS 17.105(a)(i)			
paid		-	-	(1,163)	-	-	(1,163)	IFRS 17.105(a)(III)			
Insurance acquisition cash flows	d	(76)	-	-	-	(28)	(104)	IFRS 17.105(a)(ii) IFRS 17.105A)			
Total cash flows		992	-	(1,163)	-	-	(199)				
Allocation from assets for insurance acquisition cash flows to groups of insurance contracts		(41)	-	-	-	41	-	IFRS 17.105A			
Other movements	е	-	-	-	-	(3)	(3)	IERS 17 105(d)			
Net insurance contract								11 (13 17.103(0)			
(assets)/liabilities as at 31/12		525		493	11	(31)	998	IFRS 17 99(b)			
at 31/12 Insurance contract assets as at		560	-	493	11	(31)	1,033	IFRS 17.99(b)			
31/12 Net insurance contract	f	(35)					(35)				
(assets)/liabilities as at 31/12		525		493	11	(31)	998				

11.1. Roll-forward of net asset or liability for insurance contracts issued showing the liability for remaining coverage and the liability for incurred claims (*continued*)

				20	022				
		Liabilities for re coverag	emaining e	Liabilities for inc	urred claims	Assets for insurance	Total	IFRS 17.100	
In €000	_	Excluding loss component	Loss component	Estimates of the present value of future cash flows	Risk adjustment	acquisition cash flows		IFRS 17. 105A, B	
Insurance contract liabilities as at 01/01		438	-	583	15	(47)	989	IFRS 17.99(b)	
Insurance contract assets as at 01/01	_	(37)			_		(37)	IFRS 17.99(b)	
Net insurance contract (assets)/liabilities as at 01/01	_	401	_	583	15	(4)	952		
Insurance revenue		(1,162)	-	-	-	-	(1,162)	IFRS 17.103(a)	
Insurance service expenses		125	-	1,241	(3)	-	1,363		
Incurred claims and other expenses		_	-	1,202	30	-	1,232	IFRS 17.103(b)(i)	
Amortisation of insurance acquisition cash flows	а	125	-	-	-	-	125	IFRS 17.103(b)(ii)	
Losses on onerous contracts and reversals of those losses		-	-	-	-	-	-	IFRS 17.103(b)(iv)	
Changes to liabilities for incurred claims		-	-	39	(33)	-	6	IFRS 17.103(b)(iii)	
acquisition cash flows		-	-	-	-	-	-	IFRS 17.105A, B	
insurance acquisition cash flows		-	-	-	-	-	-	II NS 17.105A, D	
Investment components		(84)	-	84	_	_	_	IFRS 17.103(c)	
Insurance service result		(1.121)	-	1,325	(3)	-	201		
Insurance finance expenses	b	-	-	17	_	-	17	IFRS 17.105(c)	
Effect of movements in exchange rates	_							IFRS 17.105(d)	
Total changes in the statement of comprehensive income	_	(1,121)		1,342	(3)		218		
Cash flows	_							IFRS 17.105(a)	
Claims and other expenses haid	С	1,424	-	-	-	-	1,424	IFRS 17.105(d)(1)	
Insurance acquisition cash flows	d	-	-	(1,445)	-	-	(1,445)	17.105(a)(iii) IFRS	
		(101)	-	-	-	(36)	(137)	17.105(a)(ii) IFRS 17.105A	
Total cash flows		1,323	-	(1,445)	-	-	(158)		
acquisition cash flows to groups of insurance contracts		(47)	-	-	-	47	-	IFRS 17.105A	
Other movements	e	-	-		-	(5)	(5)	IFRS 17.105(d)	
Net insurance contract (assets)/liabilities as at 31/12	_	556	-	480	12	(41)	1,007		
Insurance contract liabilities as at 31/12		605	_	480	12	(41)	1,056	IFRS 17.99(b)	
Insurance contract assets as at 31/12	, -	(49)			_		(49)	IFRS 17.99(b)	
Net insurance contract (assets)/liabilities as at 31/12	r _	556		480	12	(41)	1,007		

Notes:

a. Insurance acquisition cash flows were allocated on a straight-line basis during the coverage period of the respective group of contracts. Please see extracts from the accounting policy for details on Note <u>2.2.5.5</u>.

b. The Company has made an accounting policy choice for the product line to recognise net insurance finance expense in profit or loss only.

c. Any refunds of premiums have been included in this line.

d. Insurance acquisition cash flows paid after the related group is initially recognised are adjusted to the liability for remaining coverage. Insurance acquisition cash flows paid before the related group is recognised are included in assets for acquisition cash flows until the group is recognised.

e. 'Other movements' for assets for insurance acquisition cash flows include where a liability for insurance acquisition cash flows has been recognised applying another IFRS standard.

f. As at 31 December 2023 and 31 December 2022, all assets for insurance acquisition cash flows are expected to be derecognised within one year.

IFRS 17.109A

11.1. Roll-forward of net asset or liability for insurance contracts issued showing the liability for remaining coverage and the liability for incurred claims (continued)

Commentary

Insurance finance expenses comprise accrual of interest on liabilities for incurred claims.

IFRS 17.56

An entity is not required to adjust the liability for remaining coverage to reflect time value of money if the time between providing each part of the services and the related premium is no more than a year.

In the illustrative disclosure above, investment components represented by profit commission included in reinsurance contracts issued. Profit commission is closely related to reinsurance contracts issued and must not be separated, but will be shown in the separate line in the roll-forward for presentation purposes. The investment component will be excluded from insurance revenue and insurance service expenses as required by IFRS 17.85.

The Company has determined that it does not expect renewal insurance contracts to arise from new contracts written in the period, and as such it has disclosed in the notes above that all assets for insurance acquisition cash flows are expected to be derecognised within one year.

One portfolio includes reinsurance treaties where the premium is only due at the end of the coverage period. This has resulted in the portfolio being in a net asset position.

11.2. Roll-forward of net asset or liability for reinsurance contracts held showing the assets for remaining coverage and the amounts recoverable on incurred claims

11.2.1. Marine insurance

The roll-forward of the net asset or liability for reinsurance contracts held showing assets for remaining coverage and amounts recoverable on incurred claims arising on marine insurance ceded to reinsurers is disclosed in the table below:

			2023			_
	Assets for rema	ining coverage	Amounts rec incurred	overable on claims	Total	IFRS 17.100(a)-(c,
In €000	Excluding loss recovery component	- Loss- / recovery t component	Estimates of the present value of future cash flows	Risk adjustment		
Reinsurance contract assets as at	951	15	431	11	1,408	IFRS 17.99(b)
Reinsurance contract liabilities as at 01/01		<u> </u>				IFRS 17.99(b)
Net reinsurance contract assets/(liabilities) as at 01/01	951	L 15	431	11	1,408	
An allocation of reinsurance premiums	(633	3)			(633)	, IFRS 17.103(a)
Amounts recoverable from reinsurers		(15)	642	(2)	625	
for incurred claims	-	- (15)	642	(3)	625	
Amounts recoverable for incurred claims and other expenses	-		588	(3)	586	IFRS 17.103(b)(i)
Loss-recovery on onerous underlying contracts and adjustments	a -	- (15)	-	-	(15)	
Changes to amounts recoverable for incurred claims	-		54	_	54	IFRS 17.103 (b)(iii)
Reinsurance Investment components	-		-	-	-	IFRS 17.103(c)
Net income or expense from	(63)	(15)	642	(3)	(8)	
reinsurance contracts held		., (10)	0.2			
Reinsurance finance income	b 15	5 –	16	-	31	IFRS 17.105(c)
Effect of changes in non-performance	с -		-	-	-	IFRS 17.105(b)
Effect of movements in exchange rates	3	<u> </u>	2	-	5	IFRS 17.105(d)
Total changes in the statement of	(614	(15)	660	(2)	29	
comprehensive income	· · · · ·		·			IFRS 17 105(a)
Cash nows	10				101	IFRS 17 105(a)(i)
	13.	_	(750)	_	(750)	(i) IFRS 17.105(a)(iii)
Total cash flows	131	_	(759)	_	(139)	
Other movements			(155)	-	(025)	IFRS 17.105(d)
Net reinsurance contract		_	·			
assets/(liabilities) as at 31/12	467		332	8	808	
Reinsurance contract assets as at 31/12	467		332	8	808	IFRS 17.99(b)
Reinsurance contract liabilities as at 31/12						IFRS 17.99(b)
Net reinsurance contract assets/(liabilities) as at 31/12	467		332	8	808	

11.2. Roll-forward of net asset or liability for reinsurance contracts held showing the assets for remaining coverage and the amounts recoverable on incurred claims (*continued*)

				2022			
	-	Assets for remain	ing coverage	Amounts recoveral	ble on incurred	Total	IFRS 17.100(a)-(c)
				claim	s		
In €000	-	Excluding loss- recovery component	Loss- recovery component	Estimates of the present value of future cash flows	Risk adjustment		
Reinsurance contract assets as at 01/01	-	1,150	, ,	245	6	1,401	IFRS 17.99(b)
Reinsurance contract liabilities as at 01/01							IFRS 17.99(b)
Net reinsurance contract assets/(liabilities) as at 01/01		1,150		245	6	1,401	
An allocation of reinsurance premiums		(966)		_	-	(966)	IFRS 17.103(a)
Amounts recoverable from reinsurers for incurred claims		-	15	914	5	934	IFRS 17.103(b)(i)
incurred claims and other expenses		-	-	890	5	895	
Loss-recovery on onerous underlying contracts and adjustments	а	-	15	-	-	15	
Changes to amounts recoverable for incurred claims		-	-	24	-	24	IFRS 17.103(b)(iii)
Reinsurance Investment components		-	-	-	-	-	IFRS 17.103(c)
Net income or expense from		(966)	15	913	5	(32)	
reinsurance contracts held				_	-	,	
Reinsurance finance income	D	30		5	-	35	IFRS 17.105(c)
performance risk of reinsurers	с	-	-	(1)	-	(1)	IFRS 17.105(b)
rates	-	(20)		(5)	-	(25)	//////////////////////////////////////
Total changes in the statement of comprehensive income		(956)	15	913	5	(23)	
Cash flows							IFRS 17.105(a)
Premiums paid		757	-	-	-	757	IFRS 17.105(a)(i)
Amounts received		-	-	(726)	-	(726)	IFRS 17.105(a)(iii)
Total cash flows		757	-	(726)	-	(31)	
Other movements		-	-		-		IFRS 17.105(d)
Net reinsurance contract assets/(liabilities) as at 31/12		951	15	431	11	1,408	
Reinsurance contract assets as at 31/12		951	15	431	11	1,408	IFRS 17.99(b)
Reinsurance contract liabilities as at 31/12		-			_		IFRS 17.99(b)
Net reinsurance contract assets/(liabilities) as at 31/12	;	951	15	431	11	1,408	

Notes:

a. A loss-recovery component was set up upon the initial recognition of an onerous group of underlying insurance contracts. It has been subsequently reduced to zero in line with reductions in the onerous group of underlying insurance contracts in order to reflect that the loss-recovery component shall not exceed the portion of the carrying amount of the loss component of the onerous group of underlying insurance contracts that the entity expects to recover from the group of reinsurance contracts held.

b. The Company applies a consistent accounting policy to reinsurance contracts held and recognises net insurance finance expense in profit or loss only. Please refer to Note <u>2.2.5.4</u> for details.

c. During 2022, the rating of Reinsurer A decreased. The risk of non-performance for the reinsurer was reassessed and expected cash flows for the reinsurance contracts held with the reinsurer were changed. The change in the expected cash flows related to the non-performance risk change was shown separately in the roll-forward.

11.2. Roll-forward of net asset or liability for reinsurance contracts held showing the assets for remaining coverage and the amounts recoverable on incurred claims (continued)

Commentary

Although the breakdown of amounts recoverable from reinsurers might not be directly required by IFRS 17.103(b), it could provide valuable information to users of financial statements on reinsurance contracts held results calculations.

IFRS 17.68

The roll-forward for reinsurance contracts held required by IFRS 17.100 does not contain the column with the loss component as reinsurance contracts held cannot be onerous. A loss-recovery component column has been included to reflect amounts recognised in income where eligible reinsurance contracts cover onerous underlying contracts, and any subsequent reductions to such loss-recovery components.

For reinsurance contracts held to which the PAA approach has been applied, an entity must also disclose separately estimates of the present value of future cash flows and risk adjustment.

The roll-forward above shows the gross presentation of net income or expense from reinsurance contracts held. Though the presentation is not required by IFRS 17, it could be useful for the stakeholders to provide additional information similar to current reporting on reinsurance contracts held. An allocation of reinsurance premiums reconciles to an allocation of reinsurance premiums in the Statement of Comprehensive Income (gross presentation option as per IFRS 17.86). Amounts recoverable reconcile to the amounts recoverable in the Statement of Comprehensive Income.

Reinsurance finance income comprises accrual of interest on net reinsurance assets.

This publication contains disclosures required by IFRS 17 and only new and extended disclosures required by IFRS 7 *Financial instruments: Disclosures* (connected with the adoption of IFRS 9) considered relevant for insurers, accompanied by relevant accounting policies.

The summary of the disclosures required by IFRS 17 and IFRS 7 are presented below:

Reference	Guidance	New/extended/existing	Link to the disclosure
Insurance and	reinsurance contracts		
IFRS 17.78	Present separately in the statement of financial position the carrying amount of portfolios of:	New	Statement of financial position
	(a) Insurance contracts issued that are assets;		
	(b) Insurance contracts issued that are liabilities;		
	(c) Reinsurance contracts held that are assets; and		
	(d) Reinsurance contracts held that are liabilities.		
IFRS 17.80	Disaggregate the amounts recognised in the statement(s) of profit or loss and other comprehensive income into:	New	Statement of profit or loss and other comprehensive
	(a) an insurance service result, comprising insurance revenue and insurance service expenses; and		Income
	(b) insurance finance income or expenses.		
IFRS 17.82	Present income or expenses from reinsurance contracts held separately from the expenses or income from insurance contracts issued.	New	Statement of profit or loss and other comprehensive income
IFRS 17.83 -	Present in profit or loss:	New	Statement of profit or loss
85	1. Insurance revenue arising from groups of insurance contracts that depict the provision of services		and other comprehensive income
	2. Insurance service expenses arising from a group of insurance contracts issued, comprising incurred claims, other incurred insurance service expenses and other amounts		
IFRS 17.86	Present the insurance service result from a group of reinsurance contracts held as a single amount or present separately amounts recovered from the reinsurer and an allocation of the premiums paid (with specific treatment identified for the amounts contingent on claims). The allocation of premiums paid shall not be presented as a reduction in revenue. An entity should treat amounts recognised relating to recovery of losses as amounts recovered from the reinsurer.	New	Statement of profit or loss and other comprehensive income
IFRS 17.88 - 90	Make an accounting policy choice between: including insurance finance income or expenses for the period in profit or loss; or disaggregating insurance finance income or expenses between an amount recognised in profit or loss and in other comprehensive income.	Existing	Statement of profit or loss and other comprehensive income
IFRS 17.97	If an entity uses the premium allocation approach, it shall disclose:	New	Summary of significant accounting policies - Note
	(a) which of the criteria in premium allocation approach it has satisfied;		<u>∠</u>
	(b) whether it makes an adjustment for the time value of money and the effect of financial risk; and		
	(c) the method it has chosen to recognise insurance acquisition cash flows.		
IFRS 17.98 - 99	Disclose reconciliations that show how the net carrying amounts of contracts within the scope of IFRS 17 changed during the period because of cash flows and income and expenses recognised in the statement(s) of financial performance.	New	Insurance and reinsurance contracts - Note <u>11</u>
	Separate reconciliations shall be disclosed for insurance contracts issued and reinsurance contracts held. Adapt the reconciliations to reflect the features of reinsurance contracts held that differ from insurance contracts issued. Provide enough information in the reconciliations to enable users of financial statements to identify changes		

Reference	Guidance	New/extended/existing	Link to the disclosure
	from cash flows and amounts that are recognised in the statement(s) of financial performance. To comply with this requirement:		
	(a) disclose, in a table, the reconciliations set out in paragraphs 100, 102, 103, 105; and		
	(b) for each reconciliation, present the net carrying amounts at the beginning and at the end of the period, disaggregated into a total for portfolios of contracts that are assets and a total for portfolios of contracts that are liabilities, that equal the amounts presented in the statement of financial position.		
IFRS 17.100, 103, 105	Disclose reconciliations from the opening to the closing balances separately for each of:	New	Insurance and reinsurance contracts - Note <u>11</u>
	(a) the net liabilities (or assets) for the remaining coverage component, excluding:		
	(b) any loss component		
	(c) the liabilities for incurred claims. For insurance contracts to which the premium allocation approach has been applied, disclose separate reconciliations for:		
	(i) the estimates of the present value of the future cash flows; and		
	(ii) the risk adjustment for non-financial risk.		
	Separately disclose in the reconciliations required above each of the following amounts related to insurance services, if applicable:		
	(a) insurance revenue.		
	(b) insurance service expenses, showing separately:		
	 (i) incurred claims (excluding investment components) and other incurred insurance service expenses; 		
	(ii) amortisation of insurance acquisition cash flows;		
	(iii) changes that relate to past service		
	(iv) changes that relate to future service		
	revenue and insurance service expenses (with any refunds of premiums that become payable at the same time unless		
	refunds of premiums are presented as part of the cash flows in the period).		
	Separately disclose each of the following amounts not related to services provided in the period, if applicable:		
	(a) cash flows in the period, including:		
	(i) premiums received for insurance contracts issued (or paid for reinsurance contracts held);		
	(ii) insurance acquisition cash flows; and		
	(iii) incurred claims paid and other insurance service expenses paid for insurance contracts issued (or recovered under reinsurance contracts held), excluding insurance acquisition cash flows.		
	(b) the effect of changes in the risk of non-performance by the issuer of reinsurance contracts held;		
	(c) insurance finance income or expenses; and		
	(d) any additional line items that may be necessary to understand the change in the net carrying amount of the insurance contracts.		
IFRS 17.101, 104, 105	For insurance contracts other than those to which the premium allocation approach has been applied, disclose reconciliations from the opening to the closing balances separately for each of:	New	Not disclosed, refer to <u>Good Life Insurance -</u> <u>General Model publication</u>
	(a) the estimates of the present value of the future cash flows;		
	(b) the risk adjustment for non-financial risk; and		
	(c) the contractual service margin.		
	Separately disclose in the reconciliations required above each of the following amounts related to services, if applicable:		

Reference	Guidance	New/extended/existing	Link to the disclosure
	(a) changes that relate to future service showing separately:		
	(i) changes in estimates that adjust the contractual service margin;		
	(ii) changes in estimates that do not adjust the contractual service margin, i.e., losses on groups of onerous contracts and reversals of such losses; and		
	(iii) the effects of contracts initially recognised in the period.		
	(b) changes that relate to current service		
	(c) changes that relate to past service		
	Separately disclose each of the following amounts not related to services provided in the period, if applicable:		
	(a) cash flows in the period, including:		
	paid for reinsurance contracts held);		
	(II) Insurance acquisition cash flows; and		
	expenses paid for insurance contracts issued (or recovered under reinsurance contracts held), excluding insurance acquisition cash flows.		
	(b) the effect of changes in the risk of non-performance by the issuer of reinsurance contracts held;		
	(c) insurance finance income or expenses; and		
	(d) any additional line items that may be necessary to understand the change in the net carrying amount of the insurance contracts.		
IFRS 17.105A,	For insurance acquisition cash flows allocated to expected contract renewals that are recognised as an asset,	New	Insurance and reinsurance contracts - Note <u>11</u>
105B	(a) disclose a reconciliation from the opening to the closing balance of assets and aggregate information for the reconciliation at a level that is consistent with that for the reconciliation of insurance contracts, applying paragraph 98.		
	(b) separately disclose in the above reconciliation any recognition of impairment losses and reversals of impairment losses applying paragraph 28D.		
IFRS 17.106	For insurance contracts issued other than those to which the premium allocation approach has been applied, disclose an analysis of the insurance revenue recognised in the period comprising:	New	Not disclosed, refer to <u>Good Life Insurance -</u> <u>General Model publication</u>
	(a) The amounts relating to the changes in the liability for remaining coverage, separately disclosing:		
	(i) The insurance service expenses incurred during the period;		
	(ii) The change in the risk adjustment for non-financial risk;		
	(iii) The amount of the contractual service margin recognised in profit or loss because of the transfer of insurance contract services in the period; and		
	(iv) other amounts, if any, for example, experience adjustments for premium receipts other than those that relate to future service. (b) The allocation of the portion of the premiums that relate to the recovery of insurance acquisition cash flows.		
IFRS 17.107, 108	For insurance contracts other than those to which the premium allocation approach has been applied, disclose the effect on the statement of financial position separately for insurance contracts issued and reinsurance contracts held that are initially recognised in the period, showing their effect at initial recognition on:	New	Not disclosed, refer to <u>Good Life Insurance -</u> <u>General Model publication</u>
	(a) the estimates of the present value of future cash outflows, showing separately the amount of the insurance acquisition cash flows;		

Reference	Guidance	New/extended/existing	Link to the disclosure
	(b) the estimates of the present value of future cash		
	(c) the risk adjustment for non-financial risk; and		
	(d) the contractual service margin.		
	Separately disclose amounts resulting from:		
	(a) contracts acquired from other entities in transfers		
	of insurance contracts or business combinations; and		
	(b) groups of contracts that are onerous.		
IFRS 17.109	For insurance contracts other than those to which the premium allocation approach has been applied, disclose when the entity expects to recognise the contractual service margin remaining at the end of the reporting period in profit or loss quantitatively, in appropriate time bands.	New	Not disclosed, refer to <u>Good Life Insurance -</u> <u>General Model publication</u>
	Such information shall be provided separately for insurance contracts issued and reinsurance contracts held.		
IFRS 17.109A	For insurance acquisition cash flows allocated to expected contract renewals that are recognised as an asset, disclose quantitatively, in appropriate time bands, when the asset is expected to be derecognised and include those cash flows in the measurement of the group of insurance contracts to which they are allocated.	New	Insurance and reinsurance contracts - Note <u>11</u>
IFRS 17.110	Disclose and explain the total amount of insurance finance income or expenses in the reporting period. In particular, explain the relationship between insurance finance income or expenses and the investment return on its assets, to enable users of its financial statements to evaluate the sources of finance income or expenses recognised in profit or loss and other comprehensive income.	New	Total investment income and net insurance financial result - Note <u>7</u>
IFRS 17.111	For contracts with direct participation features, the entity shall describe the composition of the underlying items and disclose their fair value.	New	Not disclosed, subject to future publication (Variable fee approach)
IFRS 17.112	For contracts with direct participation features, if an entity chooses not to adjust the contractual service margin for some changes in the fulfilment cash flows, it shall disclose the effect of that choice on the adjustment to the contractual service margin in the current period.	New	Not disclosed, subject to future publication (Variable fee approach)
IFRS 17.113	For contracts with direct participation features, if an entity changes the basis of disaggregation of insurance finance income or expenses between profit or loss and other comprehensive income, disclose, in the period when the change in approach occurred:	New	Not disclosed, subject to future publication (Variable fee approach)
	 (a) the reason why the entity was required to change the basis of disaggregation; (b) the amount of any adjustment for each financial 		
	statement line item affected; and		
	(c) the carrying amount of the group of insurance contracts to which the change applied at the date of the change.		
IFRS 17.114	Provide disclosures that enable users of financial statements to identify the effect of groups of insurance contracts measured at the transition date applying the modified retrospective approach or the fair value approach on the contractual service margin and insurance revenue in subsequent periods. Hence, disclose the reconciliation of the contractual service margin, and the amount of insurance revenue, separately for: (a) insurance contracts that existed at the transition date to which the entity has applied the modified retrospective approach; (b) insurance contracts that existed at the transition date	New	Not disclosed, refer to <u>Good Life Insurance -</u> <u>General Model publication</u>
	to which the entity has applied the fair value approach; and (c) all other insurance contracts.		

Reference	Guidance	New/extended/existing	Link to the disclosure
IFRS 17.115	For all periods in which disclosures are made to enable users of financial statements to understand the nature and significance of the methods used and judgements applied in determining the transition amounts, explain how the entity determined the measurement of insurance contracts at the transition date.	New	Not disclosed, refer to <u>Good Life Insurance -</u> <u>General Model publication</u>
IFRS 17.116	For all periods in which cumulative amounts included in other comprehensive income determined applying transition paragraphs C18 (b), C19 (b), C24A(b) and C24A(c) exist, disclose a reconciliation from the opening to the closing balance of the cumulative amounts included in other comprehensive income for financial assets measured at fair value through other comprehensive income related to the groups of insurance contracts. The reconciliation shall include, for example, gains or losses recognised in other comprehensive income in the period and gains or losses previously recognised in other comprehensive income in previous periods reclassified in the period to profit or loss.	New	Not disclosed, refer to <u>Good Life Insurance -</u> <u>General Model publication</u>
IFRS 17.117	Disclose the significant judgements and changes in judgements made in applying IFRS 17. Specifically, the inputs, assumptions and estimation techniques used, including: (a) the methods used to measure insurance contracts within the scope of IFRS 17 and the processes for estimating the inputs to those methods. Unless impracticable, an entity shall also provide quantitative information about those inputs. (b) any changes in the methods and processes for estimating inputs used to measure contracts, the reason for each change, and the type of contracts affected. (c) to the extent not covered in (a), the approach used: (i) to distinguish changes in estimates of future cash flows arising from the exercise of discretion from other changes in estimates of future cash flows for contracts without direct participation features; (ii) to determine the risk adjustment for non-financial risk, including whether changes in the risk adjustment for non-financial risk, including used to an insurance finance component or are presented in full in the insurance service result; (iii) to determine discount rates; (iv) to determine investment components;	Expanded	Significant judgements and estimates - Note <u>5</u>
IFRS 17.117	(v) to determine the relative weighting of the benefits provided by insurance coverage and investment-return service or by insurance coverage and investment-related service.	Expanded	Not disclosed, subject to future publication (Variable fee approach)
IFRS 17.118	If an entity chooses to disaggregate insurance finance income or expenses into amounts presented in profit or loss and amounts presented in other comprehensive income, disclose an explanation of the methods used to determine the insurance finance income or expenses recognised in profit or loss.	New	Summary of significant accounting policies - Note 2.2.6.4
IFRS 17.119	Disclose the confidence level used to determine the risk adjustment for non-financial risk. If the entity uses a technique other than the confidence level technique for determining the risk adjustment for non-financial risk, disclose the technique used and the confidence level corresponding to the results of that technique.	New	Significant judgements and estimates - Note <u>5.1.4</u>
IFRS 17.120	Disclose the yield curve (or range of yield curves) used to discount cash flows that do not vary based on the returns on underlying items. When an entity provides this disclosure in aggregate for a number of groups of insurance contracts, it shall provide such disclosures in the form of weighted averages, or relatively narrow ranges.	New	Significant judgements and estimates - Note <u>5.1.3</u>

Reference	Guidance	New/extended/existing	Link to the disclosure
IFRS 17.121, 122, 124	Disclose information that enables users of its financial statements to evaluate the nature, amount, timing and uncertainty of future cash flows that arise from contracts within the scope of IFRS 17.	Existing	Insurance and financial risk - Note <u>3.1</u> , <u>3.2</u>
	These disclosures focus on the insurance and financial risks that arise from insurance contracts and how they have been managed. Financial risks typically include, but are not limited to, credit risk, liquidity risk and market risk.		
	For each type of risk arising from contracts within the scope of IFRS 17, disclose:		
	(a) the exposures to risks and how they arise;(b) the entity's objectives, policies and processes for managing the risks and the methods used to measure the risks; and (c) any changes in (a) or (b) from the previous period		
IFRS 17.125	For each type of risk arising from contracts within the scope of IFRS 17, disclose summary quantitative information about its exposure to that risk at the end of the reporting period. This disclosure shall be based on the information provided internally to the entity's key management personnel. Even if not provided internally to key management personnel, the following risks should be addressed (see 127 - 132 below): (a) concentrations of risk	Existing	Insurance and financial risk - Note <u>3.1</u> , <u>3.2</u>
	(b) insurance and market risks		
	(c) insurance risk - claims development (d) credit risk		
	(e) liquidity risk		
IFRS 17.126	Disclose information about the effect of the regulatory frameworks in which the entity operates; for example, minimum capital requirements or required interest-rate guarantees. If contracts are included in the same group in spite of any legal or regulatory constraints on prices or levels of benefits, disclose that fact.	Expanded	Capital - Note <u>4</u>
IFRS 17.127	Disclose information about concentrations of risk arising from contracts within the scope of IFRS 17, including a description of how the entity determines the concentrations, and a description of the shared characteristic that identifies each concentration (for example, the type of insured event, industry, geographical area, or currency). Concentrations of financial risk might arise, for example, from interest-rate guarantees that come into effect at the same level for a large number of contracts. Concentrations of financial risk might also arise from concentrations of non-financial risk; for example, if an entity provides product liability protection to pharmaceutical companies and also holds investments in those companies.	Existing	Insurance and financial risk- Note <u>3.1</u> , <u>3.2</u>
IFRS 17.128(a)(ii)	Disclose information about sensitivities to changes in risk variables arising from contracts within the scope of IFRS 17. To comply with this requirement, disclose:	Expanded	Financial risk - Note <u>3.2</u>
	(a) a sensitivity analysis that shows how profit or loss and equity would have been affected by changes in risk variables that were reasonably possible at the end of the reporting period:		
	(ii) for each type of market risk-in a way that explains the relationship between the sensitivities to changes in risk variables arising from insurance contracts and those arising from financial assets held by the entity.		
IFRS 17.128 (except 128(a)(ii)),	Disclose information about sensitivities to changes in risk variables arising from contracts within the scope of IFRS 17. To comply with this requirement, disclose:	Existing	Insurance and financial risk - Note <u>3.1</u> , <u>3.2</u>
129	(a) a sensitivity analysis that shows how profit or loss and equity would have been affected by changes in risk variables that were reasonably possible at the end of the reporting period:		

Reference	Guidance	New/extended/existing	Link to the disclosure
	 (i) for insurance risk – the effect for insurance contracts issued, before and after risk mitigation by reinsurance contracts held; 		
	(b) the methods and assumptions used in preparing the sensitivity analysis; and		
	(c) changes from the previous period in the methods and assumptions used in preparing the sensitivity analysis, and the reasons for such changes.		
	If an entity prepares a sensitivity analysis that shows how amounts different from those specified above are affected by changes in risk variables and uses that sensitivity analysis to manage risks arising from contracts within the scope of IFRS 17, it may use that sensitivity analysis in place of the analysis specified above. Also disclose: (a) an explanation of the method used in preparing such a sensitivity analysis and of the main parameters and assumptions underlying the information provided; and		
	(b) an explanation of the objective of the method used and of any limitations that may result in the information provided.		
IFRS 17.130	Disclose actual claims compared with previous estimates of the undiscounted amount of the claims (i.e., claims development). The disclosure about claims development shall start with the period when the earliest material claim(s) arose and for which there is still uncertainty about the amount and timing of the claims payments at the end of the reporting period; but the disclosure is not required to start more than 10 years before the end of the reporting period. The entity is not required to disclose information about the development of claims for which uncertainty about the amount and timing of the claims payments is typically resolved within one year. Reconcile the disclosure about claims development with the aggregate carrying amount of the groups of insurance contracts, which the ortity disclosure applying pasagraph	Existing	Insurance risk - Note Error! Reference source not found.
IEDS 17 121	100(c).	Evicting	Einancial risk - Noto 2.2.4
IFRS 17.131	 of IFRS 17, Disclose: (a) the amount that best represents its maximum exposure to credit risk at the end of the reporting period, separately for insurance contracts issued and reinsurance contracts held; and 	Existing	Filialicial fisk - Note <u>3.2.4</u>
	(b) information about the credit quality of reinsurance contracts held that are assets.		
IFRS 17.132(a)	For liquidity risk arising from contracts within the scope of IFRS 17, disclose: (a) a description of how the entity manages the liquidity	Existing	Financial risk - Note <u>3.2.1</u>
IFRS	risk. For liquidity risk arising from contracts within the scope of	Expanded	Financial risk - Note 3.2.1
17.132(b)	IFRS 17, disclose: (b) separate maturity analyses for portfolios of insurance contracts issued that are liabilities and portfolios of reinsurance contracts held that are liabilities that show, as a minimum, net cash flows of the groups for each of the first five years after the reporting date and in aggregate beyond the first five years. An entity is not required to include in these analyses liabilities for remaining coverage measured under PSS. The analyses may take the form of: (i) an analysis, by estimated timing, of the remaining contractual undiscounted net cash flows; or (ii) an analysis, by estimated timing, of the estimates of the present value of the future cash flows.		
IFRS 17.132(c)	(c) the amounts that are payable on demand, explaining the relationship between such amounts and the carrying amount of the related portfolios of contracts, if not disclosed applying (b) of this paragraph.	New	Financial risk - Note <u>3.2.1</u>

Reference	Guidance	New/extended/existing	Link to the disclosure
Financial asset	s and financial liabilities		
	The carrying amounts of each of the following categories, as specified in IFRS 9, shall be disclosed either in the statement of financial position or in the notes:	New	Statement of financial position
	(a) financial assets measured at fair value through profit or loss, showing separately (i) those designated as such upon initial recognition or subsequently in accordance with paragraph 6.7.1 of IFRS 9; (ii) those measured as such in accordance with the election in paragraph 3.3.5 of IFRS 9; (iii) those measured as such in accordance with the election in paragraph 33A of IAS 32; and (iv) those mandatorily measured at fair value through profit or loss in accordance with IFRS 9.		
IFRS 7.8	(e) Financial liabilities at fair value through profit or loss, showing separately (i) those designated as such upon initial recognition or subsequently in accordance with paragraph 6.7.1 of IFRS 9 and (ii) those that meet the definition of held for trading in IFRS 9.		
	(f) Financial assets measured at amortised cost.		
	 (g) Financial liabilities measured at amortised cost. (h) Financial assets measured at fair value through other comprehensive income, showing separately (i) financial assets that are measured at fair value through other comprehensive income in accordance with paragraph 4.1.2A of IFRS 9; and (ii) investments in equity instruments designated as such upon initial recognition in accordance with paragraph 5.7.5 of IFRS 9. 		
	If a financial asset has been designated as measured at fair value through profit or loss (or group of financial assets) that would otherwise be measured at fair value through other comprehensive income or amortised cost, disclose:	Existing	Not in scope of this publication as considered unlikely for an insurer to regularly require this to be disclosed
	(a) the maximum exposure to credit risk of the financial asset (or group of financial assets) at the end of the reporting period.		
	(b) the amount by which any related credit derivatives or similar instruments mitigate that maximum exposure to credit risk.		
IFRS 7.9,	(c) the amount of change, during the period and cumulatively, in the fair value of the financial asset (or group of financial assets) that is attributable to changes in the credit risk of the financial asset determined either:		
B5(aa)	(i) as the amount of change in its fair value that is not attributable to changes in market conditions that give rise to market risk; or		
	(ii) using an alternative method the entity believes more faithfully represents the amount of change in its fair value that is attributable to changes in the credit risk of the asset.		
	Changes in market conditions that give rise to market risk include changes in an observed (benchmark) interest rate, commodity price, foreign exchange rate or index of prices or rates.		
	(d) the amount of the change in the fair value of any related credit derivatives or similar instruments that has occurred during the period and cumulatively since the financial asset was designated.		
IFRS 7.10	If a financial liability has been designated as at fair value through profit or loss in accordance with paragraph 4.2.2 of IFRS 9 and is required to present the effects of changes in that liability's credit risk in other comprehensive income, disclose:	New	Not applicable for this publication as no financial liabilities classified as FVPL
	(a) the amount of change, cumulatively, in the fair value of the financial liability that is attributable to changes in the credit risk of that liability.		

Reference	Guidance	New/extended/existing	Link to the disclosure
	(b) the difference between the financial liability's carrying amount and the amount the entity would be contractually required to pay at maturity to the holder of the obligation.		
	(c) any transfers of the cumulative gain or loss within equity during the period including the reason for such transfers.		
	(d) if a liability is derecognised during the period, the amount (if any) presented in other comprehensive income that was realised at derecognition.		
	A financial liability designated as at fair value through profit or loss in accordance with paragraph 4.2.2 of IFRS 9 and all changes in the fair value of that liability (including the effects of changes in the credit risk of the liability) is required to be presented in profit or loss, disclose:	Existing	Not applicable for this publication as no financial liabilities classified as FVPL
IFRS 7.10A	(a) the amount of change, during the period and cumulatively, in the fair value of the financial liability that is attributable to changes in the credit risk of that liability; and		
	(b) the difference between the financial liability's carrying amount and the amount the entity would be contractually required to pay at maturity to the holder of the obligation.		
	Disclose:	Existing	Not applicable for this
	(a) a detailed description of the methods used to comply with the requirements in paragraphs 9(c), 10(a) and 10A(a) and paragraph 5.7.7(a) of IFRS 9, including an explanation of why the method is appropriate.		publication as no financial liabilities classified as FVPL
IFRS 7.11	(b) if the disclosure given, either in the statement of financial position or in the notes, to comply with the requirements in paragraph 9(c), 10(a) or 10A(a) or paragraph 5.7.7(a) of IFRS 9 does not faithfully represent the change in the fair value of the financial asset or financial liability attributable to changes in its credit risk, the reasons for reaching this conclusion and the factors it believes are relevant.	New	
	(c) a detailed description of the methodology or methodologies used to determine whether presenting the effects of changes in a liability's credit risk in other comprehensive income would create or enlarge an accounting mismatch in profit or loss. If required to present the effects of changes in a liability's credit risk in profit or loss, the disclosure must include a detailed description of the economic relationship described in paragraph B5.7.6 of IFRS 9.		
	If investments in equity instrument has been designated to be measured at fair value through other comprehensive income, as permitted by paragraph 5.7.5 of IFRS 9, it shall disclose:	New	Not applicable for this publication as no equity instruments held at FVOCI
	(a) Which investments in equity instruments have been designated to be measured at fair value through other comprehensive income?		
	(b) The reasons for using this presentation alternative.		
	(c) The fair value of each such investment at the end of the reporting period.		
11B	(d) Dividends recognised during the period, showing separately those related to investments derecognised during the reporting period and those related to investments held at the end of the reporting period.		
	(e) Any transfers of the cumulative gain or loss within equity during the period including the reason for such transfers.		
	In addition, if investments in equity instruments measured at fair value through other comprehensive income were derecognised during the reporting period, disclose: (a) The reasons for disposing of the investments.		

Reference	Guidance	New/extended/existing	Link to the disclosure
	(b) The fair value of the investments at the date of derecognition.		
	(c) The cumulative gain or loss on disposal.		
	If, in the current or previous reporting periods any financial assets have been reclassified in accordance with paragraph 4.4.1 of IFRS 9, disclose:	New	Not applicable for this publication - no reclassifications are assumed to have occurred
	 (b) A detailed explanation of the change in business model and a qualitative description of its effect on the entity's financial statements. 		
	(c) The amount reclassified into and out of each category.		
	For each reporting period following reclassification until derecognition, disclose for assets reclassified out of the fair value through profit or loss category so that they are measured at amortised cost or fair value through other comprehensive income in accordance with paragraph 4.4.1 of IFRS 9:		
IFRS 7.12B, 12C, 12D	(a) the effective interest rate determined on the date of reclassification; and		
	(b) The interest revenue recognised. If, since the last annual reporting date, financial assets have been reclassified out of the fair value through other comprehensive income category so that they are measured at amortised cost or out of the fair value through profit or loss category so that they are measured at amortised cost or fair value through other comprehensive income disclose:		
	(a) the fair value of the financial assets at the end of the reporting period; and		
	(b) The fair value gain or loss that would have been recognised in profit or loss or other comprehensive income during the reporting period if the financial assets had not been reclassified.		
	Offsetting financial assets and financial liabilities	Existing	Not in scope of current
	In respect of all recognised financial instruments that are set off in accordance with paragraph 42 of IAS 32 and recognised financial instruments that are subject to an enforceable master netting arrangement or similar agreement, irrespective of whether they are set off in accordance with paragraph 42 of IAS 32 disclose information to enable users of financial statements to evaluate the effect or potential effect of netting arrangements on the financial position. This includes the effect or potential effect of rights of set-off associated with the entity's recognised financial assets and recognised financial liabilities that are within the scope of paragraph 13A.		vurient Good Insurance Note 46)
IFRS 7.13A-F	Disclose, at the end of the reporting period, the following quantitative information separately for recognised financial assets and recognised financial liabilities that are within the scope above:		
	(a) the gross amounts of those recognised financial assets and recognised financial liabilities;		
	(b) the amounts that are set off in accordance with the criteria in paragraph 42 of IAS 32 when determining the net amounts presented in the statement of financial position;		
	(c) the net amounts presented in the statement of financial position;		
	(d) the amounts subject to an enforceable master netting arrangement or similar agreement that are not otherwise included in (b) above, including:		
	(i) amounts related to recognised financial instruments that do not meet some or all of the offsetting criteria in paragraph 42 of IAS 32; and		
	(ii) amounts related to financial collateral (including cash collateral); and		
Reference	Guidance	New/extended/existing	Link to the disclosure
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	(e) the net amount after deducting the amounts in (d) from the amounts in (c) above.		
	The above shall be presented in a tabular format, separately for financial assets and financial liabilities, unless another format is more appropriate.		
	The total amount disclosed in accordance with (d) for an instrument shall be limited to the amount in (c) for that instrument.		
	Include a description of the rights of set-off associated with the recognised financial assets and recognised financial liabilities subject to enforceable master netting arrangements and similar agreements that are disclosed in accordance with (d), including the nature of those rights.		
	Collateral	Existing	Not in scope of current
	Disclose: (a) the carrying amount of financial assets it has pledged as collateral for liabilities or contingent liabilities, including amounts that have been reclassified in accordance with paragraph 3.2.23(a) of IFRS 9; and		current Good Insurance Note 28, 47)
	(b) the terms and conditions relating to its pledge. When collateral (of financial or non-financial assets) is held and the holder is permitted to sell or repledge the collateral in the absence of default by the owner of the collateral, disclose:		
	(a) the fair value of the collateral held;		
IFRS 7.14, 15, 38	(b) the fair value of any such collateral sold or repledged, and whether there is an obligation to return it; and		
	(c) the terms and conditions associated with its use of the collateral.		
	When financial or non-financial assets are obtained during the period by taking possession of collateral held as security or by calling on other credit enhancements (e.g., guarantees), and such assets meet the recognition criteria in other IFRSs, disclose for such assets held at the reporting date:		
	 (a) the nature and carrying amount of the assets; and (b) when the assets are not readily convertible into cash, its policies for disposing of such assets or for using them in its operations. 		
IFRS 7.16A	The carrying amount of financial assets measured at fair value through other comprehensive income in accordance with paragraph 4.1.2A of IFRS 9 is not reduced by a loss allowance. The loss allowance shall not be presented separately in the statement of financial position as a reduction of the carrying amount of the financial asset, however it shall be disclosed in notes to the financial statements.	New	Debt instruments measured at fair value through other comprehensive income - Note <u>9</u>
IFRS 7.17	If an instrument that contains both a liability and an equity component has been issued and it has multiple embedded derivatives whose values are interdependent (such as a callable convertible debt instrument), disclose the existence of those features.	Existing	Not in scope of this publication as considered unlikely for an insurer to regularly require this to be disclosed
IFRS 7.18-19	Defaults and breaches For loans payable recognised at the end of the reporting period, disclose: (a) details of any defaults during the period of principal, interest, sinking fund, or redemption terms of those loans payable;	Existing	Not in scope of this publication as considered unlikely for an insurer to regularly require this to be disclosed
	(b) the carrying amount of the loans payable in default at the end of the reporting period; and		
	(c) whether the default was remedied, or the terms of the loans payable were renegotiated, before the financial statements were authorised for issue.		

Reference	Guidance	New/extended/existing	Link to the disclosure
	If, during the period, there were breaches of loan agreement terms other than those described above, disclose the same information as required by (a)-(c) if those breaches permitted the lender to demand accelerated repayment (unless the breaches were remedied, or the terms of the loan were renegotiated, on or before the end of the reporting period).		
IFRS 7.20	 Disclose the following items of income, expense, gains or losses either in the statement of comprehensive income or in the notes: (a) net gains or net losses on: (i) financial assets or financial liabilities measured at fair value through profit or loss, showing separately those on financial assets or financial liabilities designated as such upon initial recognition or subsequently in accordance with paragraph 6.7.1 of IFRS 9, and those on financial assets or financial liabilities that are mandatorily measured at fair value through profit or loss in accordance with IFRS 9 (e.g., financial liabilities that meet the definition of held for trading in IFRS 9). For financial liabilities designated as at fair value through profit or loss, an entity shall show separately the amount of gain or loss recognised in other comprehensive income and the amount recognised in profit or loss. (v) financial assets measured at amortised cost. (vi) financial assets measured at fair value through other comprehensive income in accordance with paragraph 5.7.5 of IFRS 9. (viii) financial assets measured at fair value through other comprehensive income during the period and the amount reclassified upon derecognition or loss recognised in other comprehensive income to profit or loss for the period. (b) total interest revenue and total interest expense (calculated using the effective interest method) for financial assets that are measured at fair value through other comprehensive income to profit or loss for the period. (c) fee income and expense (other than amounts included in determining the effective interest rate) arising from: (i) financial assets and financial liabilities that are not at fair value through profit or loss. (c) fee income and expense (other than amounts included in determining the effective interest rate) arising from: (i) financial assets and financial liabilities that are not at fair value through profit or loss.	Categories and scoping have been amended	Statement of profit or loss and other comprehensive income and Total investment income and net insurance financial result - Note <u>7</u>
IFRS 7.20A	Disclose an analysis of the gain or loss recognised in the statement of comprehensive income arising from the derecognition of financial assets measured at amortised cost, showing separately gains and losses arising from derecognition of those financial assets. This disclosure shall include the reasons for derecognising those financial assets.	New	Total investment income and net insurance financial result - Note <u>7</u>
IFRS 7.21	In accordance with paragraph 117 of IAS 1 Presentation of Financial Statements, discloses significant accounting policies comprising the measurement basis (or bases) used in preparing the financial statements and the other accounting policies used that are relevant to an understanding of the financial statements.	New (as the approach to classification has changed)	Summary of significant accounting policies - Note 2.3
IFRS 7.21A- 24G	Hedge accounting Apply the disclosure requirements in paragraphs 21B-24F for those risk exposures that an entity hedges and	Existing	Not in scope of current publication (refer to current Good Insurance Note 28)

Reference	Guidance	New/extended/existing	Link to the disclosure
	for which it elects to apply hedge accounting. Hedge accounting disclosures shall provide information about:		
	(a) an entity's risk management strategy and how it is applied to manage risk;		
	(b) how the entity's hedging activities may affect the amount, timing and uncertainty of its future cash flows; and		
	(c) the effect that hedge accounting has had on the entity's statement of financial position, statement of comprehensive income and statement of changes in equity.		
	The hedge accounting disclosure shall cover:		
	 (a) The risk management strategy [IFRS 7.22A-C]; (b) The amount, timing and uncertainty of future cashflows [IFRS 7.23A-F]; 		
	(c) The effects of hedge accounting of financial position and performance [IFRS 7.24A-F]; and		
	(d) information relating to where a credit exposure has been designated as measured at fair value through profit or loss [IFRS 7.24G].		
	Fair value	Existing	Not in scope of current
	Except where the following apply:		current Good Insurance
	(a) the carrying amount is a reasonable approximation of fair value; or		Note 27, 28, 30, 33, 35, 40, 41, 43)
	(d) for lease liabilities.		
	disclose the fair value of that class of assets and liabilities, in a way that permits it to be compared with its carrying amount.		
	In disclosing fair values, group financial assets and financial liabilities into classes, but offset them only to the extent that their carrying amounts are offset in the statement of financial position.		
IFRS 7.25-30	Where a gain or loss is not recognised on initial recognition of a financial asset or financial liability because the fair value is neither evidenced by a quoted price in an active market for an identical asset or liability nor based on a valuation technique that uses only data from observable markets, disclose by class of financial asset or financial liability:		
	(a) the accounting policy for recognising in profit or loss the difference between the fair value at initial recognition and the transaction price to reflect a change in factors (including time) that market participants would take into account when pricing the asset or liability.		
	 (b) the aggregate difference yet to be recognised in profit or loss at the beginning and end of the period and a reconciliation of changes in the balance of this difference. (c) why it was concluded that the transaction price was not the best evidence of fair value, including a description of the evidence that supports the fair value. 		
	Risks arising from financial instruments	Existing	Financial risk – Note 3.2
	Disclose information that enables users of its financial statements to evaluate the nature and extent of risks arising from financial instruments to which the entity is exposed at the end of the reporting period.		
IFRS 7.31-35	The disclosure required should focus on the risks that arise from financial instruments and how they have been managed. These risks typically include, but are not limited to, credit risk, liquidity risk and market risk.		
	Qualitative disclosure:		
	an entity shall disclose:		
	(a) the exposules to tisk dru now they drive,		

Reference	Guidance	New/extended/existing	Link to the disclosure
	(b) its objectives, policies and processes for managing the risk and the methods used to measure the risk; and		
	(c) any changes in (a) or (b) from the previous period.		
	Quantitative disclosure For each type of risk arising from financial instruments.		
	an entity shall disclose:		
	(a) summary quantitative data about its exposure to that risk at the end of the reporting period. This disclosure shall be based on the information provided internally to key management personnel of the entity.		
	(b) the disclosures required by paragraphs 35A-42, to the extent not provided in accordance with (a).		
	(c) concentrations of risk if not apparent from the disclosures made in accordance with (a) and (b).		
	If the disclosures as at the end of the period are unrepresentative of an entity's exposure to risk during the period, provide further information that is representative.		
	Detailed credit risk disclosures based on new IFRS 9 impairment requirements, covering:	New	Financial risk - Note <u>3.2.4</u>
	(a) credit risk management practices;		
	(b) quantitative and qualitative information about amounts arising from expected credit losses; and		
	(c) credit risk exposure.		
	The credit risk disclosures made shall enable users of financial statements to understand the effect of credit risk on the amount, timing and uncertainty of future cash flows. To achieve this objective, credit risk disclosures shall provide:		
IFRS 7 35A-N	(a) information about an entity's credit risk management practices and how they relate to the recognition and measurement of expected credit losses, including the methods, assumptions and information used to measure expected credit losses;		
	(b) quantitative and qualitative information that allows users of financial statements to evaluate the amounts in the financial statements arising from expected credit losses, including changes in the amount of expected credit losses and the reasons for those changes; and		
	(c) information about an entity's credit risk exposure (i.e., the credit risk inherent in an entity's financial assets and commitments to extend credit) including significant credit risk concentrations.		
	For all financial instruments within the scope of IFRS 7, but to which the impairment requirements in IFRS 9 are not applied, disclose by class of financial instrument:	Scope reduced to only require disclosure for financial instruments for	Not in scope of current publication (refer to current Good Insurance
IFRS 7.36	(a) the amount that best represents its maximum exposure to credit risk at the end of the reporting period without taking account of any collateral held or other credit enhancements (e.g., netting agreements that do not quality for offset in accordance with IAS 32); this disclosure is not required for financial instruments whose carrying amount best represents the maximum exposure to credit risk.	which IFRS 9 impairment requirements are not applied.	Note 47)
	(b) a description of collateral held as security and other credit enhancements, and their financial effect (e.g., quantification of the extent to which collateral and other credit enhancements mitigate credit risk) in respect of the amount that best represents the maximum exposure to credit risk (whether disclosed in accordance with (a) or represented by the carrying amount of a financial instrument).		
IFRS 7.39	Liquidity risk Disclose:	Existing	Financial risk - Note <u>3.2.1</u>

Reference	Guidance	New/extended/existing	Link to the disclosure
	(a) a maturity analysis for non-derivative financial liabilities (including issued financial guarantee contracts) that shows the remaining contractual maturities.		
	(b) a maturity analysis for derivative financial liabilities. The maturity analysis shall include the remaining contractual maturities for those derivative financial liabilities for which contractual maturities are essential for an understanding of the timing of the cash flows (see paragraph B11B).		
	(c) a description of how it manages the liquidity risk inherent in (a) and (b).		
	Market risk	Existing	Financial risk - Note <u>3.2.2</u>
	Disclose: (a) a sensitivity analysis for each type of market risk to which the entity is exposed at the end of the reporting period, showing how profit or loss and equity would have been affected by changes in the relevant risk variable that were reasonably possible at that date;		
IFRS 7.40-42	(b) the methods and assumptions used in preparing the sensitivity analysis; and		
	(c) changes from the previous period in the methods and assumptions used, and the reasons for such changes;		
	Or if an entity prepares a sensitivity analysis, such as value-at-risk, that reflects interdependencies between risk variables (e.g., interest rates and exchange rates) and uses it to manage financial risks, disclose:		
	(a) an explanation of the method used in preparing such a sensitivity analysis, and of the main parameters and assumptions underlying the data provided; and		
	(b) an explanation of the objective of the method used and of limitations that may result in the information not fully reflecting the fair value of the assets and liabilities involved.		
	When the sensitivity analyses disclosed in accordance with the above are unrepresentative of a risk inherent in a financial instrument (for example because the year-end exposure does not reflect the exposure during the year), disclose that fact and the reason that the sensitivity analyses are believed to be unrepresentative.		
	Transfers of financial assets	Existing	Not in scope of this
	Disclosure required for all transferred financial assets that are not derecognised and for any continuing involvement in a transferred asset, existing at the reporting date, irrespective of when the related transfer transaction occurred.		publication as considered unlikely for an insurer to regularly require this to be disclosed
	An entity transfers all or a part of a financial asset (the transferred financial asset) if, and only if, it either:		
	(a) transfers the contractual rights to receive the cash flows of that financial asset; or		
IFRS 7.42A-H	(b) retains the contractual rights to receive the cash flows of that financial asset, but assumes a contractual obligation to pay the cash flows to one or more recipients in an arrangement.		
	An entity shall disclose information that enables users of its financial statements:		
	(a) to understand the relationship between transferred financial assets that are not derecognised in their entirety and the associated liabilities; and		
	(b) to evaluate the nature of, and risks associated with, the entity's continuing involvement in derecognised financial assets.		
	Initial application of IFRS 9	New	Changes in accounting
IFRS 7.42L-M, O,P	Disclose the following information for each class of financial assets and financial liabilities as at the date of initial application:		policies and disclosures - Note <u>1.1.3</u>

Reference	Guidance	New/extended/existing	Link to the disclosure
	(a) the original measurement category and carrying amount determined in accordance with IAS 39 or in accordance with a previous version of IFRS 9 (if the entity's chosen approach to applying IFRS 9 involves more than one date of initial application for different requirements);		
	(b) the new measurement category and carrying amount determined in accordance with IFRS 9;		
	(c) the amount of any financial assets and financial liabilities in the statement of financial position that were previously designated as measured at fair value through profit or loss but are no longer so designated, distinguishing between those that IFRS 9 requires an entity to reclassify and those that an entity elects to reclassify at the date of initial application.		
	Disclose qualitative information to enable users to understand:		
	(a) the application of the classification requirements in IFRS 9 to those financial assets whose classification has changed as a result of applying IFRS 9.		
	(b) the reasons for any designation or de-designation of financial assets or financial liabilities as measured at fair value through profit or loss at the date of initial application.		
	Disclose the changes in the classifications of financial assets and financial liabilities as at the date of initial application of IFRS 9, showing separately:		
	(a) the changes in the carrying amounts on the basis of their measurement categories in accordance with IAS 39 (i.e., not resulting from a change in measurement attribute on transition to IFRS 9); and		
	(b) the changes in the carrying amounts arising from a change in measurement attribute on transition to IFRS 9.		
	Disclose the following for financial assets and financial liabilities that have been reclassified so that they are measured at amortised cost and, in the case of financial assets, that have been reclassified out of fair value through profit or loss so that they are measured at fair value through other comprehensive income, as a result of the transition to IFRS 9:		
	(a) the fair value of the financial assets or financial liabilities at the end of the reporting period; and		
	(b) the fair value gain or loss that would have been recognised in profit or loss or other comprehensive income during the reporting period if the financial assets or financial liabilities had not been reclassified. All the above disclosures must permit the reconciliation		
	between:		
	(a) the measurement categories presented in accordance with IAS 39 and IFRS 9; and (b) the class of financial instrument		
	Disclose information to permit the reconciliation of the ending impairment allowances in accordance with IAS 39 and the provisions in accordance with IAS 37 to the opening loss allowances determined in accordance with IFRS 9.		
	Disclose the following for financial assets and financial liabilities that have been reclassified out of the fair value through profit or loss category as a result of the transition to IFRS 9:	New	Not applicable for this publication - no instruments have been reclassified out of the
IFRS 7.42N	(a) the effective interest rate determined on the date of initial application; and		FVPL category as a result of transition
	(b) the interest revenue or expense recognised. If an entity treats the fair value of a financial asset or a financial liability as the new gross carrying amount at		

Reference	Guidance	New/extended/existing	Link to the disclosure
	the date of initial application, the disclosures immediately above shall be made for each reporting period until derecognition.		
	Disclose the carrying amount at the reporting date of the financial assets whose contractual cash flow characteristics have been assessed based on the facts and circumstances that existed at the initial recognition of the financial asset without taking into account:	New	Not applicable for this publication – upon transition, the requirements for modification and
IFRS 7.42R-S	(a) the requirements related to the modification of the time value of money element in paragraphs B4.1.9B- B4.1.9D of AASB 9 until those financial assets are derecognised.		prepayment were not determined to be impracticable
	(b) the exception for prepayment features in paragraph B4.1.12 of AASB 9 until those financial assets are derecognised.		

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WHAT DO WE KNOW ABOUT MARKET DISCIPLINE IN INSURANCE?

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What Do We Know about Market Discipline in Insurance?

Martin Eling*

Abstract

The aim of this paper is to summarize the knowledge on market discipline in insurance and other financial service sectors. Market discipline can be defined as the ability of customers, investors, intermediaries (agents, brokers), and evaluators (analysts, auditors, rating agencies) to monitor and influence a company's management. Looking at banking is especially interesting, since market discipline in this field has been studied extensively. Based on existing knowledge, we develop a framework for researching market discipline in insurance that includes its most important drivers and impediments. The results highlight a significant need for continuing research. The findings are of relevance not only for European insurers and regulators, but for institutions outside Europe.

1 Introduction

An important new dimension of the regulatory environment in banking and insurance is explicit reliance on market discipline. Market discipline—the influence of customers, investors, intermediaries (e.g., agents), and evaluators (e.g., rating agencies) on firm behavior—is a central element of both Basel II and Solvency II. Market discipline has been a perennial topic of research in the financial services sector since the 1970s (see Flannery, 2001). Likely due to the fact that Basel II has been in force for several years, most research into market discipline's ability to regulate financial services has focused on banking (see, e.g., Martinez Peria and Schmukler, 2001; King, 2008), but some research has also been conducted for the insurance sector.¹ Solvency II should add even more impetus to the study of market discipline. It is thus

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¹ Related papers, such as Harrington (2004, 2005) and Nocera (2005), will be discussed in detail throughout this paper. Another excellent introduction to market discipline in the German language is Hartung (2005). Furthermore, Solvency II's approaching effective date has resulted in several recent empirical studies on market discipline in insurance (e.g., Eling and Schmit, 2011). Also, experimental evidence from behavioral insurance (Wakker, Thaler, and Tversky, 1997; Albrecht and Maurer, 2000; Zimmer, Schade, and Gründl, 2009; Zimmer, Gründl, and Schade, 2009) is relevant for market discipline. Furthermore, the European Commission conducted research when designing Solvency II (see CEIOPS, 2009 and other information on

important to consider what is already known about market discipline in the insurance and related sectors.

To that end, this paper summarizes extant knowledge on market discipline in insurance and other financial services sectors. Looking at banking is especially interesting, since market discipline has been studied extensively in this field and much can be learned from that work. Based on existing knowledge, we develop a framework for researching market discipline in insurance that includes its most significant drivers and impediments. Our results also highlight a significant need for future research.

The results provide a clearer understanding of how market discipline works as a direct and indirect mechanism for *monitoring* and *influencing* by *customers*, *investors*, *intermediaries*, and *evaluators*. There are significant differences between banking and insurance with regard to market discipline. We also identify important differences between lines of business and legal forms in the insurance industry, which reveal that market discipline might be weak in some areas (e.g., in personal lines with complex products or with mutuals) and strong in others (e.g., in commercial lines or with stocks). We thus find a number of reasons why a "one-model-fits-all" approach might be inappropriate for market discipline in the insurance industry. The results of this analysis will be useful for insurers, regulators, and policymakers involved in revising regulatory standards both in Europe and in other markets. The article is not meant as an argument in favor of any particular type of regulation, but as an outline of potential impediments regulators may face in their efforts to enhance market discipline.

This paper is organized as follows. In Section 2 we review definitions and characteristics of market discipline that highlight differences between insurance and other financial services sectors. In Section 3 we take a look at the extant literature, especially that involving the banking field, and derive drivers of and impediments to market discipline in insurance. Section 4 concludes with potential policy implications and a summary of future research needs.²

2 Definition and measurement of market discipline

2.1. Definition of market discipline

There are several definitions of market discipline currently in use. For example, in the banking literature, there is widespread agreement that market discipline involves two distinct components (see Flannery, 2001; Bliss and Flannery, 2002, Forssbæck, 2009): (1) the ability of

the Commission's Internet pages). Finally, there is a long research tradition in the field of theory of competition, which is related to this topic (see, e.g., Stigler, 1971; Joskow, 1973; Posner, 1974; Munch and Smallwood, 1981; Stiglitz, 1984).

² Throughout this work, we analyze the role of both investors and customers in market discipline, instead of focusing on just one of these stakeholders; we also do not focus on any specific country. It is, however, important to keep in mind that differences across countries, such as governance mechanisms, insolvency experiences, and cultural norms, will affect the level of market discipline.

market participants to accurately assess the condition of a firm (*monitoring*) and (2) their ability to impact management action in a way that reflects that assessment (*influencing*). Market discipline thus has both an indirect and direct dimension (see Forssbæck, 2009). Monitoring captures the information aspect of market discipline, i.e., current and prospective bank claimants inform themselves about the bank's condition and set prices for their claims accordingly. Influence refers to the mechanism by which banks, in order to avoid the adverse consequences of stronger discipline (such as higher financing costs and, ultimately, liquidity problems) decrease their risk exposure or avoid increasing it in the first place.³

In the insurance field and with regard to the first component (monitoring), intermediaries (agents, brokers), evaluators (auditors, analysts, rating agencies), and regulators assess the financial strength and service quality of insurers. Due to the post-insolvency assessment funding mechanism of many guaranty funds and potential contagion effects of financial problems among insurers, insurers in selected lines also have an incentive to monitor each other (see Downs and Sommer, 1999). Overall, it thus seems that there are enough market participants willing to monitor risk taking in insurance. Guarantee schemes and the opaqueness of some insurers, however, could limit the willingness and ability to observe insurer behavior (see Lee, Mayers, and Smith, 1997; Babbel and Merril, 2005; Pottier and Sommer, 2006; Zhang, Cox, and Van Ness, 2009).

The second component, influencing, is difficult to evaluate. The finance literature contains numerous reasons why we should be skeptical about the ability of market participants to influence managers (see Bliss and Flannery, 2002), including asymmetric information, costly monitoring, principal-agent problems, and conflicts of interest among stakeholders. Another impediment to market discipline is a legal environment that makes shareholder activism, e.g., a hostile takeover, difficult. From the shareholders' perspective, monitoring and incentive contracts can be combined to mitigate the agency problem, and there are also other mechanisms that may induce managers to act in the shareholders' best interests, such as reputational concerns, competitive labor markets, and the threat of takeover, dismissal, or bankruptcy (see Aggarwal and Samwick, 1999). The insurance sector has a number of characteristics that might limit the influencing component. For example, there is a relatively small risk of a bank run, at least in selected lines.⁴ Furthermore, especially in personal lines, individual policy-

³ Compared to the neoclassical definition of market discipline in a complete and frictional market with symmetric information (leading to different willingness to pay depending on the default put option value; see Doherty and Garven, 1986), these definitions typically emphasize the aspect of asymmetric information, which is reduced by increasing market transparency.

⁴ In non-life insurance, payments are linked to claim events and insurers are funded in advance. In life insurance, surrendering a contract has disadvantages, such as lapse costs, and thus the policyholder has an incentive not to terminate the contract. See Eling and Schmeiser (2010). In countries with low lapse costs and higher mobility of capital, there could be a risk of an "insurance run," at least in selected insurance sectors.

holders are relatively small in terms of contract volume, which limits their ability to affect decisions. It thus seems that the influencing component of insurance sector market discipline is not without difficulties and needs more study.

While most definitions of market discipline in the banking context include the monitoring and influencing components, Harrington (2004) and Nocera (2005) add another interesting dimension that is especially relevant in the insurance context. They differentiate between *investor-driven market discipline*, i.e. financial market discipline, and *customer-driven market discipline*, i.e. the extent to which demand by policyholders is sensitive to insolvency risk and thereby motivates insurers to manage their risk. In creating an insurance-specific definition of market discipline, it is also important to recognize the other monitoring and influencing elements (in addition to customers and investors), i.e., intermediaries (agents, brokers) and evaluators (analyst, auditors, rating agencies) that are involved in the buying decision. We thus define market discipline in the insurance sector as the ability of *customers, investors, intermediaries*, and *evaluators* to *monitor* and *influence* the management of insurance companies.

2.2. Measurement of market discipline

Table 1 contains a review of the different facets of market discipline and derives measures for quantifying it. Based on the definition developed in the last section, we distinguish between "direct" and "indirect" monitoring and influencing. While in theory, customers and investors directly influence management decisions, intermediaries and evaluators have both a direct and an indirect influence. For example, customers or investors react to market signals set by evaluators (e.g., changes in ratings)—a direct influence by customers; an indirect influence by evaluators. However, given that evaluators' indirect influence can lead to direct influence by customers and investors, they might also have an opportunity to exert a direct influence themselves if, for instance, managers are keen to do anything possible to avoid a rating downgrade.

Who?	Customers and ing and influence	investors (dire	ect monitor-	Intermediaries and evaluators (direct and indirect monitoring and influencing)		
	Customers	Investors- stockholders	Investors- bondhold- ers	Rating agencies	Auditors/ analysts	Agents/ brokers
How?	Risk-sensitive customer demand	Risk- sensitive stock prices	Risk- sensitive bond yields	Product and company ratings	Recommen- dations to investors	Recommen- dations to customers
Measure- ment	Growth in premiums and policies/lapse	Equity prices	Debt yields	Rating changes	New recom- mendation	New recom- mendation
Relevance in insurance	High	Limited	Limited	High	Limited	High

Table 1: Facets of market discipline

In the banking literature, investor-driven market discipline is usually studied either by analyzing stock prices or yields on debt instruments (see, e.g., Martinez Peria and Schmukler, 2001;

See DeAngelo, DeAngelo, and Gilson (1994) with regard to the collapse of First Executive in the United States in the early 1990s.

King, 2008). However, the insurance sector is different from the banking sector, especially as to business models and financing. Regarding legal form, in banking and insurance both, many companies are mutuals and many stock companies are not traded on the capital market. Furthermore, for many of the insurance companies that are traded on the stock exchange, there are no liquid markets, since only a small fraction of the stocks are in free float. Stock prices are thus of only limited use when evaluating risk sensitivity in insurance.⁵ Furthermore, the financing of insurers is different from that of other providers in the financial sector in that debt instruments typically are not traded (the reserves of the policyholders are the major debt instruments). The debenture spreads typically considered as market elements disciplining management behavior for the banking industry thus, for the most part, do not exist in the insurance industry.^{6/7}

An alternative way to measure market discipline is by looking at it as customer-driven. To this end, the studies on market discipline in insurance consider premium growth and lapse. Epermanis and Harrington (2006) and Eling and Schmit (2011) analyze premium growth around rating changes as a proxy for market discipline. Zanjani (2002) considers changes in lapse rates following rating changes. But there are also limitations in measuring customer-driven market discipline. For example, premiums are not the price of insurance, but the price times quantity. Typically, we cannot observe insurance prices, i.e., the premium rates per unit of coverage, and even if such information were available, it would be very difficult to compare insurers since the underlying expectations of claims costs used for calculating rates might be very different and are not observable (see Harrington, 2004). A proxy for insurance prices sometimes used in literature is the relation of insurer premiums to realized claims (see Sommer, 1996; Phillips, Cummins, and Allen, 1998).

From the above discussion, we conclude that in the insurance sector, market discipline focuses on the risk sensitivity of customer demand (for insurance coverage) and investor willingness to pay (for equity and debt). To measure market discipline, we thus need to identify market signals that affect the risk sensitivity of customers or investors. The second step is then to evaluate whether this signal has a significant impact on our measures of market discipline, i.e., demand and willingness to pay. Table 2 reviews a selection of potential signals.

⁵ Reinsurers are different from insurers in that many of them have stocks traded on capital markets. Furthermore, many large holdings, such as Allianz SE, are listed on the capital market. Overall, however, the number of liquid stocks is very limited. A broad empirical analysis based on stock prices is thus difficult.

⁶ There are some debt instruments, for example, credit-default swaps or hybrid instruments (e.g., participating certificates), but the number of observable instruments and the number of companies involved in such transactions is, again, very small. Catastrophe bonds or other forms of alternative risk transfer are not suitable since these are issued in special purpose vehicles and thus are not linked to the default risk of the sponsor.

⁷ There are other important differences between insurance and banking. For example, the insurer's assets and liabilities are stochastic, particularly in the non-life sector. In banking, questions of duration (which do not play a large role in non-life insurance) and asset risk are the main risk factors. In life insurance, duration is also of high importance; additionally, insurers' liabilities often embed many options and guarantees.

Market signal with regard to risk situation	Signal given by	Market reaction
(input variable)		(output variable)
Investor-driven market discipline		
Annual and interim reports with outlook	Company	_
Ad-hoc disclosure	Company	Investors' willingness to new reflected in
Director's dealings	Company	Stock prices
Analysts' comments	Analysts	Bond vields
Company financial strength ratings	Rating agencies	Bond yields
Takeover bids	Competitor	
Customer-driven market discipline		
Product ratings	Rating agencies	Customer demand reflected in
Surplus participation	Company	Dromium growth
Complaint statistics	Regulator	
Statistics published by associations	Insurance associations	Lapse

Table 2: Measuring market discipline

Table 2 can be used to formulate hypotheses with regard to the disciplining impact. For example, we might expect that a better company rating has a positive influence on equity prices (i.e., an increase in price) and a negative influence on the debt yields (i.e., the spread over the risk-free interest rate decreases).⁸ We consider three main sources of market signals: the company, the evaluators (analysts, rating agencies), and the regulator (other sources of information such as consumer protection institutions or recommendations by friends are also important, but are not discussed in this paper). Table 2 also allows us to identify elements unique to the insurance sector that might be used to measure market discipline. Among these are product ratings, surplus participation, complaints, and other published statistics.

2.3. Discussion of market discipline in the context of other regulatory measures

Basel II and Solvency II are two examples of how market discipline research is relevant to regulatory problems. In both systems, market discipline is the third fundamental pillar. The expectation is that a transparent market will require less overt intervention by regulators as market participants themselves force appropriate firm behavior. The third pillar of Solvency II will be composed of public disclosure and reporting requirements that are intended to facilitate more rigorous and uniform analysis of capital adequacy across firms and across national borders. Improved market discipline is the hoped-for result. The extent to which market discipline can be relied on for successful regulation, however, depends on the strength of its influence.

Different mechanisms have been employed during the last decades in an effort to limit default probability in the financial services sector. Historically, solvency regulation focused on different types of safety nets, including deposit insurance schemes in banking (such as the Federal Deposit Insurance Corporation (FDIC) in the United States after the Great Depression) and guarantee funds in insurance. Until the early 1990s, many countries in the European Un-

⁸ As we will discuss below, typically the downside risk of a bad market signal is greater than the upside potential of a good market signal. See, e.g., Hong, Lim, and Stein (2000) and Halek and Eckles (2010). The direction of impact also depends on the signal. For example, a takeover bid might be a signal that the stock is underpriced because of poor management.

ion addressed default risk by limiting competition via market entry restrictions and price and product regulation (see Eling, Klein, and Schmit, 2009). Rules for capital adequacy imposing certain minimum capital requirements—on either an absolute or a risk-adjusted basis (e.g., Solvency I, U.S. RBC Standards) have also been introduced (see Eling, Schmeiser, and Schmit, 2007, for an overview).

None of these market interventions is without disadvantages. Safety nets can create moral hazard since the risk reduction the parties face leads them to take riskier actions or fail to take precautionary measures (see Demirgüç-Kunt and Detragiache 2002; De Ceuster and Masschelein, 2003). Distortions of competition, such as price and product regulation, decrease efficiency and limit innovation. Capital adequacy rules might be subject to adverse incentives, as illustrated in the recent financial crisis, e.g., by AIG and its credit default swap business, which was motivated by regulatory and rating arbitrage (see Eling and Schmeiser, 2010).

Recently, regulators have begun to incorporate a new market-based element into regulatory regimes by increasing transparency and disclosure requirements. Basel II's inclusion of "market discipline" among its three regulatory pillars is the most notable example. Regulators see two main advantages to market discipline, which is, theoretically, brought into play by greater disclosure requirements. First, stakeholder monitoring should improve due to the availability of more information and, second, this improved monitoring is expected to influence insurer behavior, i.e., the stakeholders are expected to use their market power to influence management decisions with regard to risk taking.

Which of the different regulatory mechanisms is best is a question yet to be answered. In the case of Solvency II, regulators advocate a combination of capital adequacy (Pillar 1) and market discipline (Pillar 3). This provides the opportunity to integrate different approaches, but has several disadvantages too, one of which is cost: requiring insurers to employ extensive financial models (Pillar 1), as well as increased reporting requirements (Pillar 3), are both going to impose a substantial financial burden on insurers. The cost of regulation might outweigh its benefits.⁹ This argument is especially relevant for small insurers that might be pushed out of the market by requirements too costly to meet.

Market discipline cannot completely replace regulation. In a perfect and arbitrage-free market, where providers and policyholders have perfect information, one might argue that policyholders should be free to purchase insurance with a lower safety level as long as the contract pricing is fair, i.e., the net present value is zero (see Doherty and Garven, 1986; Gatzert and

⁹ There is no clear evidence as to whether the costs of Solvency II are higher than its benefits. The EU Commission demands an assessment of the costs of regulation for each new tool, including Solvency II. See, e.g., CEA (2007) for estimations of the administrative costs. Problems that arise are: (1) only direct costs (companies' costs of implementation and future use) are considered and no indirect costs (inefficiency, effects on premiums and their result on other markets that depend on the insurance sector) and (2) potential benefits are described, but not quantified in any way.

Schmeiser, 2008). In this world, the policyholder, being fully informed, could choose to accept the default risk and hence there would be no need for capital regulation. However, in the insurance context, there is a "third-party problem", i.e., the policyholder may cause an injury to a third party. This third party has no ex-ante contractual relationship with either the insurer or the policyholder, and hence cannot agree to some possibly low safety level in regard to the insurer's default, with a consequent lower premium. In this situation, there is still a need for solvency requirements and regulation that cannot be replaced by enhanced market discipline per se.

Furthermore, there are interactions between the different pillars of Solvency II that need to be kept in mind when designing the regulation, especially regarding incentives. One important interaction is between the risk-based capital requirements in Pillar 1 and market discipline in Pillar 3. Under Pillar 3, insurance companies must publish their solvency testing results, thus informing the stakeholders and making the insurer's safety level a competitive factor in the market. However, since internal risk models can be used for this purpose (as long as they are approved by the regulator), insurance companies may have an incentive to use internal models that "make them look safe" instead of models that would more accurately reflect their true risk situation (for a more detailed discussion on the pros and cons of internal models, see Eling, Schmeiser, and Schmit, 2007).

3 Evidence for market discipline (including facilitators and impediments)

We consider 62 peer-reviewed empirical studies on market discipline in financial services. For the field of insurance, we also include recent material presented at peer-reviewed conferences so as to increase the number of studies. Twenty of the 62 studies address the insurance industry; the other 42 studies are from the banking literature, reflecting the fact that, at least in terms of research questions and countries analyzed, more work has been done in banking field. However, as we highlight in the following discussion, some of the insights from the banking studies might be transferable to the insurance industry, e.g., with regard to safety nets.¹⁰

3.1. Evidence for market discipline in banking

There is a vast literature on market discipline, especially for the banking industry; research on the topic in this field dates back to the 1980s (see Table 3). The motivation for all this work is that innovation, e.g., in financial engineering, enabled financial intermediaries to become in-

¹⁰ The 16 oldest papers in banking are also summarized in Gilbert (1990). We also identified studies in other sectors of financial services, such as mutual funds (see, e.g., Dangl, Wu, and Zechner, 2008), but to reduce the complexity of the review, did not include them. Given the broadness of literature on market discipline in banking, we also cannot claim that our collection of 62 studies is complete, but we believe that the most important studies are included. Also note that experimental evidence, such as Wakker, Thaler, and Tversky (1997), is mentioned in our paper but is not included in the tables.

volved in complex financial operations that were very costly to monitor. Furthermore, excessive risk taking in the 1980s resulted in the failure of some depository institutions, which raised concern over safety and prompted calls for stricter regulation. Thus, by the 1980s, banking regulators had market discipline on the policy agenda (see Park and Peristiani, 1988). Research in this area was given another boost when market discipline was made one of the three pillars of Basel II.

There are two main empirical results in regard to market discipline found in the banking literature. First, there is evidence of market discipline in banking over the last decades across a variety of measures and countries, i.e., with regard to stock prices (e.g., Baer and Brewer, 1986), debt (Avery, Belton, and Goldberg, 1988; Sironi, 2003), and deposit growth (Park and Peristiani, 1998).¹¹ Second, investors in bank stocks have the strongest incentives to be risk sensitive,¹² while market discipline in debt is often hampered by safety nets. Safety nets of all kinds create moral hazard and reduce market discipline (Billett, Garfinkel, and O'Neal, 1998; Demirgüç-Kunt and Huizinga, 2004; Nier and Baumann, 2006). There is evidence that reducing safety nets increases market discipline (Flannery and Sorescu, 1996). A potential policy implication is that regulators should enforce modifications of existing guarantee schemes to bring market discipline into play. In this context, a number of authors (e.g., Benink and Wihlborg, 2002) advocate for banks to issue a substantial amount of uninsured deposits in order to enhance market discipline.

In addition to these two main results, we identify four other aspects from the banking literature that might be of relevance to the insurance industry. First, the strength of market discipline depends on the line of business. Morgan and Stiroh (2001), e.g., show differences for credit card, commercial, and industrial lending, all of which carry a penalty in terms of higher spreads. Second, Sironi (2003) found differences depending on ownership structure, i.e., less discipline was found for government-owned institutions. This is an important finding in light of the traditional separation of stock, mutual, and public companies in the insurance industry and the resulting differences in agency conflicts (see, e.g., Eling and Luhnen, 2010). Third, Nier and Baumann (2006) emphasize that market discipline depends on the level of competition, i.e., market discipline is more effective in curbing the greater risk taking that arises in the face of competition in those countries or industries where the competition is strong. Finally,

¹¹ There are also authors who find no evidence of market discipline (Gorton and Santomero, 1990) but, compared to the number of papers that do find such evidence, they are few in number. Of special relevance to Solvency II because of the focus on European data is the work by Sironi (2003), who finds that European banks' debenture spreads reflect risk. More recently and also using European bank data, Distinguin, Rous, and Tarazi (2006) observe that the accuracy of models in predicting bank financial distress through use of stock market information depends on the extent to which bank liabilities are tradable. Models that account for these nuances, therefore, will be more valuable.

¹² In spite of their residual claimholder position and risk of total loss, this result is not trivial, since with limited liability, equity holders might have an incentive to increase risk taking, as shown by Merton (1977). One might thus argue that equity holders are less suitable monitors. Empirically, however, and also in more complex theoretical models, this risk-increasing influence is not clear. See De Ceusters and Masschelein (2003).

Pop (2006) finds international differences in market discipline and argues that much work needs to be done, especially in Japan and certain European countries, to level the playing field so that market discipline can operate. Thus, there might be variation in the effectiveness of market discipline depending on the regulatory and cultural environment. The findings also highlight the potential for regulation to undermine market discipline (see, e.g., Billett, Garfinkel, and O'Neal, 1998).

Finally, it should be noted that almost all studies in the banking sector address the monitoring element of market discipline; that is, they test whether investors accurately understand changes in the firm's condition and incorporate these into prices. Such testing, however, reveals nothing about the influencing component of market discipline, i.e., the response of firm managers to investor feedback. Bliss and Flannery (2002) is one of the few studies that directly measures this component by developing an influence regression using equity returns and expected managerial behavior. Their results show that market influence is weak. More research into the influencing component would be extremely useful.

3.2. Evidence for market discipline in insurance

Market discipline in insurance has not been as extensively researched as it has in the banking field and what work there is on the subject rarely employs non-U.S. data. Table 4 presents an overview of this research, dividing it into three categories: investor-driven market discipline (equity prices), customer-driven market discipline (price of insurance contracts, sum of premiums, number of contracts, lapse), and selected other aspects (impact of guarantee funds, studies on opaqueness).

#	Authors	Title	Country	M ain results		
	Equity prices					
1	Beighley, Boyd and Jacobs (1975), J of Bank Research	Bank Equities and Investor Risk Perceptions: Some Entailments to Capital Adequacy	US	evidence for MD	in stock prices	Share prices of bank stocks are estimated as a function of capital ratios, earnings and growth of earnings, asset size, and loss rates; banks with higher capital ratios and lower loss rates tend to have higher share prices.
2	Pettway (1980), J of Financial and Quantitative Analysis	Potential Insolvency, Market Efficiency, and the Bank Regulation of Large Commercial Banks	US	evidence for MD	in stock prices	Considering several large banks that failed, returns to shareholders are simulated for several years prior to their failure. Returns on the stocks of banks that failed decline relative to simulated returns two years before failure.
3	Brewer and Lee (1986), Economic Perspectives	How the Market Judges Bank Risk	US	evidence for M D	in stock prices	Betas are estimated as functions of accounting ratios; some of the measures chosen to reflect risk have positive, significant regression coefficients.
4	Cornell and Shapiro (1986), J of Banking and Finance	The Reaction of Bank Stock Prices to the International Debt Crisis	US	evidence for MD	in stock prices	Percentage of Latin American loans to total assets has a significant, negative impact on returns in 1982; energy loans had a negative impact in 1982-83. Loans purchased from Penn Square Bank had a negative impact on returns in the month in which that bank failed.
5	Shome, Smith and Heggestad (1986), J of Financial Research	Capital Adequacy and the Valuation of Large Commercial Banking Organization	US	evidence for MD	in stock prices	Stock prices are estimated as functions of earnings and capital ratios; the coefficient on the capital ratio is positive and significant for some years, insignificant for other years.
6	Baer and Brewer (1986), Economic Perspectives	Uninsured deposits as a source of MD: Some new evidence	US	evidence for MD	in stock prices	Variability of stock prices help explain CD rates; Even when banks are solvent, the deposit market does charge riskier banks more; weak evidence for MD in uninsured deposits; coefficients on risk measures used by bank supervisors not significant.
7	Smirlock and Kaufold (1987), J of Business	Bank Foreign Lending, Mandatory Disclosure Rules, and the Reaction of Bank Stock Prices	US	evidence for MD	in stock prices	Evaluates the effect of the M exican debt crises on bank value; banks were not required to disclose their M exican debt at the time of the 1982 moratorium; nevertheless investors were able to discriminate among banks with different levels of exposure.
8	Randall (1989), New England Economic Review	Can the Market Evaluate Asset Quality Exposure in Banks?	US	evidence for M D is weak	in stock prices	Stock prices of the bank holding companies that reported relatively large losses declined relative to market average stock prices only after the problems became public knowledge, not during the periods which the banks began assuming relatively high risk.
9	Distinguin, Rous, and Tarazi (2006), J of Financial Services	MD and the use of stock market data to predict bank financial distress	Europe	evidence for MD	in stock prices	Early warning model for European banks, which tests if market based indicators add predictive value to models relying on accounting data; link between market information and financial downgrading in the light of the safety net and asymmetric information hypotheses.
10	Park and Peristiani (2007), J of Banking and Finance	Are bank shareholders enemies of regulators or a potential source of MD?	US	evidence for MD	in stock prices	Shareholders' risk-taking incentives were confined to a small fraction of highly risky institutions; even though shareholders have incentives to transfer wealth by pursuing riskier strategies, this risk taking is mostly outweigh trough the possibility of losing charter value.
11	Curry, Fissel, and Hanweck (2008), J of B. and Finance	Equity market information, bank holding company risk, and MD	US	evidence for MD	in stock prices	Investigate whether equity market variables can add value to accounting models that predict changes in bank risk ratings; findings suggest that one-quarter lagged market data adds forecast value to lagged financial statement data and prior supervisory information.
12	Pop and Pop (2009), Quarterly Review of Economics and	Requiem for MD and the specter of TBTF in Japanese banking	Japan	evidence for M D is weak	in stock prices of too-big- to-fail companies	The functioning of MD in Japanese banking may no longer be valid in the post-Resona period (bailout); the too-big-to-fail doctrine created a hostile environment for effective MD; incentives to monitor and influence risk taking behavior are comprised.
	(Subordinated) debt prices					
13	Pettway (1976), J of Finance	Market Tests of Capital Adequacy of Large Commercial Banks	US	evidence for M D is weak	in subordinated notes and debentures	The rate premium is estimated as a function of the capital ratio of banks and other variables; the coefficient on the capital ratio is not significant.
14	Beighley (1977), J of Bank Research	Bank Equities and Investor Risk Perceptions: Some Entailments to Capital Adequacy	US	evidence for MD	in subordinated notes and debentures	The rate premium is estimated as a function of several measures of risk including a loss ratio and a leverage ratio; the coefficients on the loss and leverage ratios are positive and significant.
15	Fraser and McCormack (1978), J of Fin. and Quant. A nalysis	Large Bank Failures and Investor Risk Perceptions: Evidence from the Debt Market	US	evidence for MD is weak	in subordinated notes and debentures	The rate premium is estimated as a function of the capital ratio and the variability of profits divided by total assets; none of the independent variable has a significant coefficient.
16	Avery, Belton, and Goldberg (1988), Jof Money C, and B	MD in regulating bank risk: New evidence from the capital markets	US	evidence for MD is weak	in subordinated notes and debentures	SD risk premiums are weakly related to Moody's and Standard and Poor's ratings, but uncorrelated with the FDIC Index and any balance- sheet variables. Moreover, the FDIC Index of bank riskings is found to be negatively related to the public bond ratings
17	Gorton and Santomero (1990), J	MD and bank subordinated debt: Note	US	evidence for MD is weak	in subordinated notes and depentures	Virtually no relation between a bank's risk measures and its implied asset volatility; results offer little support for the presence of MD in the subordinated debt market
18	Flannery and Sorescu (1996), J	Evidence of bank MD in subordinated	US	reduction of safety	in subordinated debt yields	SD yields become more closely correlated with indicators of bank risk as regulatory treatment of failed banks' debentures became more harsh: hypestors have rationally reflected changes in the overnment's policy toward absorbing private losses in the event of failure
19	Morgan and Stiroh (2001), J of	MD of banks: The asset test	US	evidence for M D	in bond spreads	Bond spreads reflect the asset mix credit card and commercial and industrial lending also carry a penalty in terms of higher spreads; Banks contamplating a shift into ricking activities e.g. in trading can even to pay higher spread.
20	Jagtiani and Lemieux (2001), J of	MD prior to bank failure	US	evidence for MD	in bonds during period prior to failure	Bond spreads start rising (up to 100 %) as early as 6 quarters prior to failure as financial condition and credit rating deteriorates; increase MD by increasing subordinated debt would be effective at the bank holding company level
21	Sironi (2002), J of Banking and Finance	Strengthening banks' MD and leveling the plaving field: A re the two compatible	cross country	evidence for M D	in subordinated debt	Spread/rating-relationship is same for US & European banks; US banks tend to pay higher average spread because of poorer rating; controlling on default risk US banks pay lower average spread than corresponding European banks; spreads rise when ratings worsen.
22	Sironi (2003), J of Money, Credit and Banking	Testing for MD in the European banking industry: Evidence from subordinated debt	Europe	evidence for M D	in European subordinated notes and debentures	Results support the hypothesis that SD investors are sensitive to bank risk, with the exception of SD issued by public sector banks, i.e., government owned or guaranteed institution; sensitivity of SD spreads to measures of stand-alone risk has been increasing from the first
23	Goyal (2005), J of Financial Intermediation	MD of bank risk: Evidence from subordinated debt contracts	US	evidence for M D	in subordinated debt with restrictive covenants	M D through writing restrictive covenants (on investments, payment of dividends, financing) in bank debt contracts; deregulation leads to higher risk-taking so private incentives to monitor bank's risk taking are stronger.
24	Ashcraft (2008), J of Financial Intermediation	Does the MD banks? New evidence from regulatory capital mix	US	evidence for M D	in SD	The FDIC Improvement Act has impact on the influence of debt investors over bank outcomes; increase in SD has positive effect in helping a bank recover from distress; fixed income investors able to exert influence on behavior of distressed institution.

Table 3: Results of literature review for banking (CD: certificate of deposit, J: journal, MD: market discipline, SD: subordinated debt)

# Authors	Title	Country	Main results		
Deposits (uninsured and i	nsured)				
25 Crane (1976), J of Bank Research	A Study of Interest Rate Spreads in the 1974 CD Market	US	evidence for MD is weak	in uninsurance deposits	The determinants of CD rates are evaluated using factor analysis; a factor that reflects profit rates and capital ratios is not a significant variable in explaining CD rates.
26 Hannan and Hanweck (1988), J of Money, Credit and Banking	Bank Insolvency Risk and the Market for Large Certificates of Deposit	US	evidence for M D	in uninsurance deposits	Estimate the relationship between the rates individual banks offer on large uninsured certificates of deposits and perceived bank risk. CD rates tend to be higher at banks with more variable income and lower capital ratios, holding constant the influence of total assets.
27 Cargill (1989), J of Financial Services Research	CAM EL Ratings and the CD M arket	US	evidence for M D	in CD rates	Investigates the relationship between CD rates as a measure of bank risk and the CAMEL scores assigned to a bank as a result of an onsite examination; results suggest that CAMEL ratings are primarily provies for available market information about the quality of a bank.
28 Ellis and Flannery (1992), J of Monetary Economics	Does the debt market assess large banks' risk? Time series evidence from money center	US	evidence for M D	in CD rates	CD rates paid by large money center banks include significant default risk premia; consider time series data on specific banks' daily offering rates during the period M ay 1982 through Julv 1988.
29 Park (1995), Quarterly Review of Economics and Finance	MD by depositors: evidence from reduced-form equations	US	evidence for M D	large time deposits	Riskier banks offered higher interest on large time deposits but attracted less of these deposits; large time depositors forced risky banks to pay higher premiums; analysis also considers the effects of bank size, but fails to find evidence that depositors prefer large banks.
30 Billett, Garfinkel, and O'Neal (1998), J of Financial Economics	The cost of market versus regulatory discipline s in banking	US	safety nets reduce M D	insured deposit are impediments to M D	Insured deposit financing shields banks from the full costs of MD; Moody's downgrades are associated with negative abnormal equity returns that are increasing in the bank's reliance on insured deposits; banks raise their use of insured deposits following increases in risk.
31 Park and Peristiani (1998), J of Money, Credit and Banking	MD by Thrift Depositors	US	evidence for M D	debt and deposit (in thrift institutions)	Riskier thrifts are found to pay higher interest rates and attract smaller amounts of uninsured deposits; qualitative results are similar for fully insured deposits, but the statistical significance is substantially lower.
32 Mondschean and Opiela (1999), J of Financial Services	Bank time deposit rates and MD in Poland: the impact of state ownership and deposit	Poland	evidence for M D is weak	in partial deposit insurance	Establishment of explicit deposit insurance lowers incentive for monitoring; insurance coverage per bank forces to spread (concentration) risk; MD is weak with fully guaranteed banks.
33 Martinez Peria and Schmukler (2001), J of Finance	Do depositors punish banks for bad behavior? M D, deposit insurance, and	cross- country	safety nets do not reduce M D	deposit insurance and the impact of banking crises	Depositors discipline banks by withdrawing deposits and by requiring higher interest rates; deposit insurance does not appear to diminish the extent of MD; investors' responsiveness to bank risk.
34 Demirgüç-Kunt and Huizinga (2004), J of Mon. Economics	M D and deposit insurance	cross- country	safety nets reduce M D	deposit insurance limits M D	Deposit insurance reduces required deposit interest rates, while at the same time it lowers MD on bank risk taking; deposit insurance schemes internationally vary in their coverage, funding, and management.
35 Imai (2006), J of Banking and Finance	M D and deposit insurance reform in Japan	Japan	evidence for M D	deposit insurance reform on partly insured time	Reform raised sensitivity of deposit rates and growth to bank default risk; interest rate difference between partially insured time-deposits and fully insured deposits increased for risky banks; reform had positive effects on MD by reducing supply of time deposits of risky banks;
36 Spiegel and Yamori (2007), J of Banking and Finance	M arket price accounting and depositor discipline: The case of Japanese regional banks	Japan	evidence for M D	in deposit levels (evidence for depositors discipline)	Banks that opt for price-to-market accounting have more intense depositors discipline; depositors in price-to-market-sample are more sensitive to bank financial condition.
37 Uchida and Satake (2009), J of International Financial Markets,	M D and bank efficiency	Japan	evidence for M D	in banks with more outstanding deposits / more	Banks with more depositors have lower cost inefficiency (consistent with the hypothesis that depositors put a substantial pressure on bank management); being listed at the stock market has a positive impact on cost inefficiency (not consistent with the MD hypothesis).
Other (off-balance sheet a	activities, safety nets)				
38 Hassan, Karels, and Peterson (1994), J of Banking and Finance	Deposit insurance, M D and off-balance sheet banking risk of large US commercial banking	US	evidence for M D	in off-balance sheet activities	Examine the riskiness of off-balance sheet activities by employing option-pricing models to calculate bank asset risk; empirical results suggest the existence of MD of off-balance sheet activities; market participants price these as risk-reducing.
39 Koppenhaver and Stover (1994), J of Banking and Finance	Standby letters of credit and bank capital: Evidence of MD	US	evidence for M D	in off-balance sheet contingent liability	Hypothesis that MD causes a joint relationship between bank capital and standby letter of credit decisions for banks that are active participants in the standby market or that rely heavily on purchased funds is tested and cannot be rejected.
40 Bliss and Flannery (2002), European Finance Review	M D in the governance of US bank holding companies: M onitoring vs. Influencing	US	evidence for M D is weak	here focus on influence (market influence is weak)	Influence regression using equity returns and expected managerial behavior, among others; although some patterns consistent with market influences are identified, the methodology does not provide strong evidence taht investors influence managerial actions.
41 Nier and Baumann (2006), J of Financial Intermediation	M D, disclosure and moral hazard in banking	cross- country	safety nets reduce M D	go vernment safety nets reduce M D	Safety nets result in lower capital buffers; stronger MD resulting from uninsured liabilities and disclosure results in larger capital buffers; also finds that the effect of disclosure and uninsured funding is reduced when banks enjoy a high degree of government support.
42 Carow, Heron, Lie, and Neal (2009), J of Corporate Finance	Option grant backdating investigations and capital M D	US	evidence for M D	in option grant patterns related to agency-costs	Capital markets are proactive in disciplining companies for heightened agency problems even if there are no formal inquiries to that matter; markets began to anticipate which firms would have backdating problems and bid their stock prices down.

Table 3: Results of literature review for banking (CD: certificate of deposit, J: journal, MD: market discipline, SD: subordinated debt) (continued)

Regarding the impact of rating changes on equity prices (investor market discipline), the early study by Singh and Power (1992) and the recent studies by Halek and Eckles (2010, 2011) find conflicting results. Singh and Power (1992) find no price reaction to rating changes, whereas Halek and Eckles (2010, 2011) document asymmetric responses (downgrades cut share prices, upgrades have little effect). Halek and Eckles (2010) attribute these differences to the structure of the ratings data, the event study methods, and the timing of the data. Other work on the impact of market signals on equity prices (Fenn and Cole, 1994; Brewer and Jackson, 2002) is more in line with Halek and Eckles (2010, 2011), so that overall it seems that there is evidence for market discipline in insurer stock prices.

The work on price of insurance offers implications rather than direct tests of market discipline. For example, studies from the 1990s (Sommer, 1996; Phillips, Cummins, and Allen, 1998; Cummins and Danzon, 1997) find a negative relationship between price proxies and firm risk in the property-casualty industry. This finding is consistent with market discipline, but as lower prices could also cause greater risk, it is difficult to identify the cause and effect relationship in this case. Also in a property-casualty context and using simple experiments, Wakker, Thaler, and Tversky (1997) show the risk sensitivity of policyholders in that an increase in default risk severely affects policyholder willingness to pay. Similar experimental evidence is found in Albrecht and Maurer (2000), Zimmer, Schade, and Gründl (2009), and Zimmer, Gründl, and Schade (2009). An important result of these studies is that in a transparent setting, market discipline will work, since knowing about differences in default risk severely affects policyholder behavior.

As to consumer influences, Zanjani (2002) uses A.M. Best ratings as a risk measure to study their relationship with life insurer lapse rates and finds some evidence of market discipline, with a positive relationship between risk (i.e., ratings) and lapse. Epermanis and Harrington (2006) consider insurer ratings in a property/casualty context and observe significant premium declines following rating downgrades, particularly for firms that had low ratings even before the downgrade. They also note the concentration of premium declines in commercial lines, which tend not to be protected by guarantee associations. In line with these findings for property-casualty insurance, Baranoff and Sager (2007) find that life insurance demand declines after a rating downgrade. Eling and Schmit (2011) confirm this finding for the German market. They find premium declines as well as increased lapse rates following rating downgrades. All these studies document asymmetric responses to positive and negative news.

Moreover, three studies from the 1990s (Lee, Mayers, and Smith, 1997; Brewer, Mondschean, and Strahan, 1997; Downs and Sommer, 1999) show that the establishment of guarantee funds increases risk taking. The establishment of guarantee funds might hamper risk sensitivity, especially that of policyholders.

#	Authors	Title	Country	Main results			
	Equity prices						
1	Singh and Power (1992) J of Risk and Insurance	The Effects of Best's Rating Changes on Insurance Company Stock Prices	US	no evidence for M D	in stock prices	Statistically insignificant stock price reactions to both rating upgrades and downgrades; suggest that A.M. Best & Co. is a monitor of publicly available information; it is not an agency that reveals new information to the financial markets.	
2	Fenn and Cole (1994), J of Financial Economics	Announcements of asset-quality problems and contagion effects in the life insurance industry	US	evidence for MD	in stock prices	Contagion effects in the returns of life insurance stocks at time of announcements of problems in their investment portfolios; effects are larger for insurers with significant junk bonds/commercial mortgage assets and mobile customers represented by GICs.	
3	Brewer and Jackson (2002), Fed. Reserve Bank of Chicago	Inter-Industry Contagion and the Competitive Effects of Financial Distress Announcements:	US	evidence for MD	in stock prices	Insurers with risky assets experience larger stock price declines than those with less risky assets during downturns in the real estate and bond markets.	
4	Halek and Eckles (2010), J of Risk and Insurance	Effects of Analysts' Ratings on Insurer Stock Returns: Evidence of Asymmetric Responses	US	evidence for MD	in stock prices	Examine the information value contained in insurer rating changes; downgrades cut share prices by approximately 7 percent, upgrades have little significant effect; share prices react more strongly to A M. Best and Standard & Poor's downgrades than to Moody's	
5	Halek and Eckles (2011), Working Paper	Determinants of Abnormal Reactions to Insurer Rating Downgrades	US	evidence for MD	in stock prices	Observe that abnormal insurer returns resulting from rating downgrades are associated with, among other insurer characteristics, the extent of the downgrades and the level of institutional ownership	
	Price of insurance						
6	Sommer (1996), J of Risk and Insurance	The Impact of Firm Risk on Property-Liability Insurance Prices	US	evidence for MD	in the price of insurance	Examines the impact of insolvency risk (implied by the option pricing model of insurance) on the prices the insurer obtains for its products (proxied by net premiums/discounted losses) in the property-liability market; finds negative relationship between firm risk and prices.	
7	Cummins and Danzon (1997), J of Financial Intermediation	Price, Financial Quality, and Capital Flows in Insurance Markets	US	evidence for MD	in the price of insurance	Price of insurance (ratio of premiums to discounted losses) is inversely related to insurer default risk; evidence that prices declined in response to loss shocks of the mid-1980s.	
8	Phillips, Cummins, and Allen (1998), J of Risk and Insurance	Financial Pricing of Insurance in the Multiple- Line Insurance Company	US	evidence for MD	in the price of insurance	Prices vary across firms depending upon overall-firm default risk and the concentration of business among subsidiaries; within a given firm, prices do not vary by line after adjusting for line-specific liability growth rates, negative relation between price and risk.	
9	Carson, Doran, and Dumm (2011). Risk Man, and Ins. Review	MD in the Individual Annuity Market	US	evidence for M D	in the price of annuties	Measure annuity contract yields during the accumulation phase and find that firm financial strength is positively related to yield; this anomaly can be viewed as a form of market discipline itself. For at least four related reasons; one is the incentive to provide a track record	
	Sum of premiums/number of contracts/lapse						
10	Zanjani (2002), Federal Reserve Bank of New York	MD and Government Guarantees in Life	US	evidence for MD	in lapse	Uses A.M. Best ratings as his measure of financial risk to study its relationship with life insurer lapse rates; finds some evidence of MD, with a positive relationship between risk (i.e. ratings) and lapse	
11	Epermanis and Harrington (2006), J of Money, Cr. and B.	M D in Property/Casualty Insurance: Evidence from Premium Growth	US	evidence for MD	in premium growth	Consider insurer ratings in a property/casualty context and observe significant premium declines following rating downgrades, particularly for firms that had low ratings even before the downgrade.	
12	Baranoff and Sager (2007), Working Paper	M D in Life Insurance: Insureds' Reaction to Rating Downgrades in the Context of Enterprise	US	evidence for M D	in premium growth (number of policies) life insurance	Observe reduced demand for life insurance products (measured by the number of policies written) when ratings decline; Granger causality demonstrates that the direction of the relationship flows from ratings downgrade to decline in demand rather than the reverse	
13	Eling and Schmit (2011), Geneva Risk and Insurance Review	Is There M D in the European Insurance	Germany	evidence for M D	in premium growth, lapse	Analyze MD in the German insurance market using Epermanis and Harrington's (2006) research design and find premium declines as well as increased lapse rates following rating downgrades	
14	Eling and Kiesenbauer (2011), J of Financial Services Research	Does Surplus Participation Reflect Market Discipline?	Germany	evidence for M D	in premium growth, lapse	Find a significant positive dependence between surplus participation and new business growth as well as a significant negative dependence between surplus participation and growth of lapse volume for the German market. Customers thus react to changes.	
	Other (safety nets, opaque	ness)					
15	Lee, Mayers, and Smith (1997), J of Financial Economics	Guaranty funds and risk-taking Evidence from the insurance industry	US	safety nets reduce M D	impact of guarantee funds	Evidence suggests that the risk of insurers assets portfolio increases after the enactment of state guaranty funds; this effect is significant only for stock insurers.	
16	Brewer, Mondschean, and Strahan (1997), J of Risk and	The Role of Monitoring in Reducing the Moral Hazard Problem Associated with Government Currentees: Evidence from the life Insurance	US	safety nets reduce M D	impact of guarantee funds	Risk taking by life insurers is higher in states with guaranty funds that are underwritten by taxpayers. In states where taxpayers pay for the costs of resolving insolvencies, life insurers hold portfolios with higher overall stock market risk and higher levels of risky assets. By cost and in states where the guaranty funds are underwritten by the industry overall stock market risk and higher levels of risky assets. By	
17	Downs and Sommer (1999), J of Rick and Insurance	Monitoring, Ownership, and Risk-Taking: The	US	safety nets reduce	impact of guarantee funds	Empirical results provide support for the risk-subsidy hypothesis and demonstrate the essential link between insider ownership and risk-	
18	Liu, Epermanis, and Cox (2005), Working Paper	Agency Conflicts and MD: Evidence from	US	evidence for MD	in guaranteed investment	Study the influence of GICs as a disciplinary mechanism for bondholders and find some MD influences. The agency conflict risk-shifting	
19	Pottier and Sommer (2006).	Opaqueness in the Insurance Industry: Why Are	US	some insurers are	e.g., smaller insurers. stock	Identifies insurer characteristics that are associated with greater difficulty in financial strength evaluation (smaller insurers, stock insurers,	
	Risk Man. and Ins. Review	Some Insurers Harder to Evaluate than Others?		difficult to evaluate	insurers	greater stock investments, more diversified), as proxied for by the level of rating disagreement by Moody's and Standard and Poor's.	
20	Lin, Oppenheimer, and Chen	Intangible Assets, Going-for-broke and Asset	US	evidence for MD	regarding asset risk and	Intangible assets play an important role in P&L insurers' asset risk taking incentives; negative relationship between insurers' asset risk	
	(2008), Risk M. and Ins. Review	Risk Taking of Property and Liability Insurance			ratings	and intangible assets.	

Table 4: Results of literature review for insurance (J: journal, GIC: guaranteed investment contracts, MD: market discipline)

Recently, some studies have documented the opaqueness of insurers, which might limit the monitoring element of market discipline. For example, smaller insurers, stock insurers, insurers with greater stock investments, and more diversified insurers are, in general, more difficult to evaluate (see Pottier and Sommer, 2006). The willingness to monitor insurers might particularly depend on the line of business considered. Zhang, Cox, and Van Ness (2009) find evidence that differences among insurers in the opacity of lines of business (life vs. non-life, long vs. short tail) affect adverse selection for investors in the market for insurer equities, which should directly affect market discipline.

3.3. Derivation of trends, consensus, and notable conflicts in the subject areas

Looking at the relevant work published over the last few decades reveals that the definition of market discipline has evolved from simply considering the risk sensitivity of debt prices and spreads to accounting for the effects of this risk sensitivity on managerial decisions (see Covitz, Hancock, and Kwast, 2004). Market discipline is thus not an easy-to-measure one-dimensional construct, but is, instead, multifaced. These different facets are reflected in how market discipline is defined in the insurance context (see Section 2.1). Both in banking and insurance almost all studies focus on the monitoring component of market discipline, which is easier to measure than its influencing component (see Bliss and Flannery, 2002).

Overall, it appears that market discipline is reasonably strong in most insurance markets, but that there is some variation when it comes to legal form (Liu, Epermanis, and Cox, 2005), lines of business (Epermanis and Harrington, 2006), and countries (Eling and Schmit, 2011). All these results are confirmed on a broader empirical basis in the banking sector (see, e.g., Morgan and Stiroh, 2001; Sironi, 2003; Pop, 2006).

Moreover, and again for both banking and insurance, there appears to be a consensus that informational limitations and the regulatory environment play a major role in the level of market discipline, especially with regard to incentive conflicts between principals (stockholders, debtholders) and agents (managers). Agency problems are far stronger in those cases where market discipline is undermined by informational limitations. For example, agency effects are more common among mutual insurers, which generally have lower informational requirements than stock insurers. This result might be interpreted to mean that market discipline is an appropriate approach in some contexts, but that regulatory efforts will work better in others. In particular, regulatory efforts are likely more appropriate where informational limitations exist, while market discipline might be more effective when much information is available (see Eling and Schmit, 2011).

Another aspect is the asymmetry in findings regarding positive and negative news. The downside risk of sending a bad market signal is typically greater than the upside potential of a good market signal. Examples in the insurance sector are papers by Epermanis and Harrington (2006), Baranoff and Sager (2007), and Halek and Eckles (2010). These results are consistent with those found in the finance literature on the effects of negative and positive news (see, e.g., Chan, 2003; Hong, Lim, and Stein, 2000).

There is thus a great deal of similarity between banking and insurance when it comes to findings from market discipline research. However, there are also notable differences between the two fields, especially regarding the relevance of debt instruments, which can be traced back to differences in the business models of these two financial institutions. For example, Zhang, Cox, and Van Ness (2009) discuss differences in opaqueness between banking and insurance that might affect market discipline. They argue that some sources of information opaqueness for banks and insurers are common, but that others are unique to insurers. In banking the liabilities are typically well-defined with respect to duration and amounts. In insurance there is greater asymmetric information because of the less certain duration of claim payments and the difficulty to predict loss amounts. Babbel and Merrill (2005) note in this context that the opaqueness and complexity of insurance contracts allow managers to create illusory values. Colquitt, Hoyt, and McCullough (2006) show that property-liability insurers are able to use greater discretion in setting loss reserves. Polonchek and Miller (1996) find greater information asymmetries with respect to the assets and liabilities of insurers compared to banks. Also Morgan (2002) provides evidence that insurers can be more opaque than banks, in his case considering disagreements among rating agencies.

Harrington (2005) directly compares market discipline in banking and insurance. He argues that market discipline is greater in insurance than in banking and concludes that capital requirements should be less stringent for insurers. Based on an analysis of risk sensitivity, buyer sophistication, search costs, and franchise value, he argues that overall market discipline is highest in reinsurance, moderate in life and non-life, and low in banking (see Table 1 in Harrington, 2005).

3.4. Derivation of facilitators and impediments to market discipline in insurance

The discussion has shown that market discipline is strongly affected by outside factors that can either facilitate or impede it. Recent government rescue efforts and direct intervention in the insurance and, especially, banking markets has created a great deal of distortion that has affected market discipline to a significant degree. These interventions give rise to some complicated, but highly interesting, questions involving moral hazard, the role of guarantee funds, the structure of rescue operations, the obligations of the firm being rescued, and the impact intervention has on competition. The most important impediments to market discipline in insurance are the following.

1. Work on banking finds that guarantee associations are an impediment to market discipline (see, e.g., Demirgüç-Kunt and Huizinga, 2004). Without guarantee schemes, bank manag-

ers have strong incentives to avoid risky loans and risky investments; however, mandated deposit insurance eliminates much of the risk involved in these activities. There are also several insurance studies that observe increased risk taking following the establishment of guarantee associations (see Lee, Mayers, and Smith, 1997; Downs and Sommer, 1999). One study also finds that risk levels increase when the amount of insurance sold increases in jurisdictions where guarantee associations exist (Brewer, Mondschean, and Strahan, 1997). These findings are in line with the expectation that the establishment of guarantee funds reduces monitoring incentives and thus negatively affects market discipline. There could thus be differences in market discipline between different lines of business or different regions, depending on the insurance guarantee fund design in place.

- 2. In addition to these direct market distortions, there might also be indirect or implicit market distortions. An example is bailout schemes, such as the "too-big-to-fail" concept, where governments feel obliged to rescue a troubled bank or insurer because they fear financial contagion.
- 3. The financial crisis revealed specific impediments to market discipline, e.g., the complexity of financial products. Financial institutions are often highly complex both in their ownership structure and in the nature of their business. For example, many insurers have dozens of reinsurance arrangements primarily intended to diversify risk, but these also reduce transparency and can sometimes mask financial problems (see Harrington, 2004).
- 4. Harrington (2004) mentions the judgment-proof problem as an impediment to market discipline. Under a compulsory insurance regime (e.g., auto liability, workers' compensation, or professional liability), individuals with few assets to insure might simply buy the cheapest insurance they can find, with no regard to insolvency risk. The combination of compulsory insurance and judgment-proof buyers reduces the risk sensitivity of demand.

There are thus a number of reasons to expect differences in market discipline depending on the line of business. (1) The judgment-proof problem that arises in the case of compulsory insurance impedes market discipline. (2) Government or privately organized fund guarantees of all insurance claims and benefits destroy all incentives for market discipline. Reducing coverage, however, could be quite conducive to market discipline. (3) Differences in lines of business due to products and business complexity affect the degree of market discipline. Standardized products make it easier to identify differences between insurers, but this is more difficult when it comes to complex products and businesses. (4) An increase in financial leverage increases company risk. Life insurers typically have a much higher leverage than nonlife insurers and this might affect the risk sensitivity of investors. (5) Market discipline could be stronger in commercial lines compared to personal lines. Policyholders in personal lines have less resources and competence (e.g., in terms of education to read financial reports) to engage in efficient monitoring than do policyholders in commercial lines, which are usually larger and have more resources. On the other hand, personal line insurance decisions directly affect an individual's own wealth, whereas commercial insurance decisions do not usually have much of a personal impact on the decision maker. This situation can create moral hazard problems, which lowers the efficiency of monitoring in commercial lines. Nonetheless, evidence indicates that market discipline in commercial lines is stronger than in personal lines (Epermanis and Harrington, 2006).

In this context, we would also expect more market discipline in reinsurance than in insurance because reinsurance covers only commercial business, while insurance covers both commercial and personal lines. An implication for policymakers is that when comparing personal and commercial insurance, it appears that market discipline is weak in some areas and strong in others.

This last point is also true when it comes to legal form. Insurers listed on the stock market are subject to more extensive reporting requirements than are mutual insurers. Liu, Epermanis, and Cox (2005) document that agency effects are more common among mutual insurers, which generally have lower informational requirements than do stock insurers. These results can be interpreted to mean that relying on market discipline is appropriate in some areas, but that formal regulation will work better in others. In particular, formal regulation is likely to be the more effective course in the presence of informational deficits (i.e., with mutuals). Market discipline will be more effective when information is generally available (i.e., with stocks).

When it comes to facilitating market discipline, the availability and quality of information is crucial. In this context, an important result from the experimental literature (Wakker, Thaler, and Tversky, 1997; Zimmer, Gründl, and Schade, 2009) is that if all necessary information is available, customers will discipline insurance companies by changing their demand. However, more information is not necessarily better information. In a theoretical world, Holmström (1979) shows that in moral hazard problems more information about the agent is never detrimental to the principal and, under mild assumptions, is always actually beneficial. In the "real" world, however, things can be quite different, especially when the cost of information is taken into consideration. Furthermore, more information can be useful only if it is consistently accessible and provided in a standardized form so that market participants can understand it and make appropriate comparisons between insurers. Standardization, consistency, and accessibility are thus important requirements for effective market discipline.

In conclusion, an effective market discipline framework needs to encompass the following. Stakeholders need to consider themselves at risk and they need to be able to observe risk efficiently, i.e., at reasonable costs. Reasons why risk sensitivity might be limited include guarantee schemes, anticipation of "too-big-to-fail" effects, compulsory insurance and judgment-

proof buyers, and product and business complexity. Even if stakeholders consider themselves at risk, monitoring will be hampered when the necessary information is too difficult and/or too costly to obtain. Furthermore, adverse selection could occur if some stakeholders have more information than others. Only if stakeholders consider themselves at risk and are able to observe risk efficiently will market discipline work. Market discipline will then manifest in either a reduction in willingness to pay (price effect) or in a reduction in demand for insurance from a particular provider (quantity effect). This might result in an influencing effect that can manifest directly, by managers shifting their risk exposure, or indirectly, by regulators acting on the signal.

4 Conclusions and future research

Market discipline focuses on the risk sensitivity of customer demand for insurance products and on investor willingness to pay for equity and debt. Evidence from the banking sector shows that market discipline can work very efficiently. However, the banking sector is different from the insurance sector in some aspects, so not all findings from banking may be generalizable to the insurance industry.

There are not enough insurance sector market discipline studies to conduct an in-depth impact assessment, but those that do exist indicate that market discipline appears to vary in terms of strength between the German insurance market (Eling and Schmit, 2011) and the U.S. market (Epermanis and Harrington, 2006). Furthermore, there are important drivers of (standardization and accessibility) and impediments to (market distortions such as guarantee funds) market discipline that regulators should keep in mind when attempting to enhance it. If market participants are not aware of risk and/or are unable to evaluate risk at a reasonable cost, there will be no market discipline.

There are many avenues future research can take. There is a great need for empirical tests of the risk sensitivity of policyholder demand, especially for countries other than the United States. Regarding potential investor-driven market discipline, it might be interesting to analyze spreads of credit default swaps, data that are available, at least for large insurers and reinsurers. For large insurers and reinsurers listed on stock markets, analyzing stock prices might be useful. It also would be interesting to see how risk sensitivity varies across countries, by comparing data from different regions and countries, and across different legal forms, by comparing mutual and stock insurer data. Such empirical tests could then be compared with results from other insurance and banking studies.

Another interesting task would be to measure the influence of market discipline in insurance with the methodology employed by Bliss and Flannery (2002). We also need more theoretical studies on market discipline in insurance, e.g., models that analyze the implications of market discipline on competition or models on the role of franchise value in insurance and how this is

affected by risk. These theoretical models could then be tested with empirical data to increase our knowledge of market discipline in the insurance industry.

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Insurance Regulation in the United States and the European Union

A Comparison

Martin Eling, Robert W. Klein, and Joan T. Schmit November 2009



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Insurance Regulation in the United States and the European Union

A Comparison

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Executive Summary

In this paper we compare insurance regulatory frameworks in the United States (US) and European Union (EU), focusing primarily on solvency, but also considering product and price regulation, as well as other elements of consumer protection. This comparison highlights the use of more fluid and principles-based approaches in the EU as it is developing under Solvency II, while the US continues to focus essentially on static, rules-based regulation. The discussion further notes evidence suggesting that the EU approach is more successful in promoting a financially solid insurance sector.

Our analysis leads us to recommend that US regulators move toward a more comprehensive and integrated approach to assessing the financial risk of insurance companies. Such a move would incorporate greater emphasis on a flexible, principles-based system to include qualitative aspects, such as management assessment, while placing heavy emphasis on advanced quantitative methods. Among the more advanced methods that should be considered are enterprise risk management techniques that include tools such as dynamic financial analysis.

In the US, the states have indicated a desire to move toward a principles-based approach to financial regulation, but, at present, their specific initiatives are limited and the scope and pace of a broader restructuring of a state-based solvency framework is uncertain. Significant segments of the industry favor the creation of an optional federal charter (OFC) for insurance companies. It is quite possible that, under an OFC, the federal government would adopt a principles-based approach to insurance regulation consistent with the system being developed for banks under the Basel II accords. Indeed, the current financial crisis has added impetus to revamping the regulatory framework for all financial institutions, including insurance companies, but federalizing insurance regulation continues to face fierce political opposition from some groups. Hence, both in the US and in the EU, informed discourse will be essential to realizing the vision of a modern, efficient system for insurance regulation.

We argue in favor of a flexible scheme, where riskbased capital standards are used as guidelines-to assist insurers in managing their risk structuresrather than as absolute requirements (Eling et al. 2007). Flexibility is likely to yield a variety of risk strategies, limiting the possibility of systemic risk inherent in using a single standard model for all or even most insurers. Model arbitrage would be less effective, too, given that the requirements are flexible rather than rigid. US regulators are also encouraged to consider forming something similar to the Committee of European Insurance and Occupational Pension Supervisors (CEIOPS), which was created to redesign the EU regulatory framework. Currently CEIOPS is conducting public forums in which suggestions for future solvency rules are collected and discussed. In the US, the closest analog to a structure that would have any kind of real authority would be an interstate compact. This vehicle has been used to "harmonize" the regulation of life insurance products, and such a vehicle could be used to advance and harmonize other aspects of US insurance regulation.

Introduction

The United States (US) and the European Union (EU) offer an interesting and important contrast in their respective approaches to insurance regulation. In 1994, the EU enacted its first joint insurance regulations for member countries. Important elements of this first endeavor include pricing, products, and consumer protections. Solvency issues were formally addressed with the implementation of Solvency I in 2004-a set of rules focused mostly on minimum capital requirements. Following Basel II in the European banking industry, Solvency II will establish principles-based, risk-based capital standards when implemented, now scheduled for 2012. The lengthy and involved analysis phase associated with Solvency II, as well as the influence of insurers affected by it, has generated significant global interest. It may well be that Solvency II yields a model for international insurance regulation, particularly as we see movement toward international accounting standards. Insurance regulation in the US has been guided by a different philosophy, and this raises significant issues in terms of its place in the global marketplace.

The purpose of this paper is to present similarities and differences between the US and EU insurance regulatory frameworks, focusing primarily on solvency, but also extending to product, price, and other consumer protection elements. We discuss the pertinent elements of each system and review the literature that assesses their efficiency and effects on insurance markets. Our focus follows the current emphasis on solvency and enterprise risk management (ERM). First we review existing regulations and then discuss the details of the proposed Solvency II regulations. We also summarize the current knowledge about the effectiveness of various solvency regulations in limiting financial risk and insolvency costs, as well as other aspects of regulation. In some sense, our paper presents a contrast between the "old" and the "new" in insurance regulatory systems.

During the past fifteen years, most major economies around the globe have moved from fixed capital standards for their solvency regulation to some form of risk-based capital (RBC) standards. Canada and the US were among the first to introduce these risk-based standards, in 1992 and 1994 respectively. Japan followed with the "solvency margin standard" in 1996 and Australia with the "general insurance reform act" in 2001. Europe is relatively late in developing RBC requirements; however, some EU countries already have implemented first approaches: the United Kingdom (UK) introduced their concept of enhanced capital requirement and individual capital assessment in 2004, and Switzerland enacted the Swiss Solvency Test in 2006. Currently, the EU is working toward harmonizing risk-based methods across member countries, in what is known as Solvency II. While the EU may seem to be "late to the table," it has the advantage of being able to develop a system based on the evolution of financial risk management and the innovations of some of its members.

The timing of the EU approach is relevant in that we know much more about how to incorporate dynamic cash flow analysis into solvency regulation now than we did in 1994 when the US formula-based system was devised. Also, existing empirical investigations of the US system raise questions about its accuracy and stringency, suggesting the need for improvement. Furthermore, the influence of qualitative, as well as quantitative, elements in supporting solvency are better understood today than in 1994. The size and historical independence of the US insurance industry has likely contributed to its regulatory inertia and reluctance to embrace new methods. This position is becoming less tenable in the context of the insurance industry's and insurance markets' evolution, not just in the US but also around the globe,
as well as the growing importance of international trade in insurance.

The research suggests that the type of regulatory standards and monitoring systems employed in the US are deficient and could be improved by using more advanced methods. The best systems appear to employ dynamic financial analysis, as well as qualitative methods that are more common in prudential frameworks. Hence, we may be able to use the US experience to anticipate how Solvency II will produce a better regulatory system. In turn, Solvency II may well offer insights that could be used to improve US regulation.

In reviewing recent regulatory solvency approaches and related literature, three main trends can be observed: (1) a movement toward an integrated total balance sheet approach that takes into account the interdependencies between assets and liabilities; (2) a greater focus on a flexible, principles-based setting instead of fixed rules (for example, many regulators allow the use of individual risk models instead of standard models to calculate the target capital requirements); and (3) the inclusion of qualitative aspects such as assessment of management in the regulatory framework. We will highlight these elements in our discussion.

Under Solvency II, insurance regulation is organized in three pillars. The first pillar addresses quantitative regulations for capital requirements. The second pillar focuses on the qualitative elements of supervision and incorporates regulatory principles on internal risk control, pricing, and product design. To the third pillar belong considerations about market transparency and disclosure requirements, which aim at promoting market discipline. Both the Basel II accords for banking regulation and the evolution of international insurance regulatory standards embrace the threepillar framework.

We follow the three pillars for our analyses of the US and EU insurance regulatory systems, first presenting the quantitative aspects and then following with the qualitative. We also discuss issues of market transparency, including an overview of product and price regulation as well as other elements of consumer protection. Empirical evidence of regulatory effects, particularly associated with solvency regulation, is also provided. Following this review of the US and EU systems, we present a discussion of differences and similarities. Because we hope that our monograph's primary audience will be those in a position to affect insurance regulatory mechanisms, we conclude the paper with a discussion of policy implications and future research.

Insurance Regulation in the United States

Insurance regulation in the US has its historical origins in the early 1800s.¹ While the regulation of other financial institutions has been largely federalized, insurance continues to be regulated by the states. The states each retain the principal responsibility for regulating insurance; the federal government has the authority to supersede state regulation when it chooses but has only done so selectively to date. Principal responsibility for the financial regulation of an insurer is delegated to its domiciliary state, but non-domiciliary states also perform some financial monitoring of all insurers licensed to operate in their jurisdictions and can suspend or revoke their licenses.² Each state also retains the principal responsibility for regulating the market practices of all insurers operating in its jurisdiction. The states use the National Association of Insurance Commissioners (NAIC) to coordinate and support their regulatory activities. There have been proposals to increase the federal role in insurance regulation, for example, through an optional federal charter (OFC) for insurance companies and agents, but the prospects for federal regulation in the near term are daunting.³

The NAIC promulgates model laws and regulations, but the states are not required to enact them. In some areas, such as risk-based capital (RBC) standards, all the states have adopted NAIC model laws and related technical specifications. In many aspects of solvency regulation, the states have adopted uniform standards developed by the NAIC, but they may differ somewhat in terms of their specific rules.⁴ In the area of market regulation, there is much less uniformity, and the states may or may not use NAIC models or modify them according to their specific preferences. States may also adopt their own laws or regulations for which there is no related NAIC model.

It is important to understand the US philosophy and approach to insurance financial regulation, which contrast sharply with the EU paradigm. The states apply a prescriptive or rulesbased approach to regulating insurers' financial conditions and market practices that is oriented by an accounting perspective. This is reflected in numerous laws, regulations, rules, and other measures that govern virtually every aspect of insurers' activities and financial structure. Regulators focus on insurers' compliance with these prescriptions rather than the competence and prudence of their management and their overall financial risk. Insurers' reported accounting values and financial statements are the principal measures by which their regulatory compliance is determined. This approach permeates all aspects of solvency oversight, including capital requirements.

In earlier times, the US paradigm might have been considered appropriate given the state of the science of financial risk analysis and management. However, in our opinion, it appears to be increasingly antiquated, inefficient, and potentially irrelevant in light of the evolution of the insurance industry and management methods. It is also lagging far behind the evolution of solvency oversight in the EU and the development of international standards. This raises serious concerns about the efficiency and effectiveness of US regulation. It also will have significant adverse implications for US insurers competing in a global marketplace.

The states have been slow to adopt anything resembling a principles-based approach (despite statements to the contrary), and this is unlikely to change without significant economic and/or political pressure or a regime change. To their credit, US regulators have sought to increase their emphasis on risk assessment within their monitoring systems and associated tools. For example, the NAIC created the Risk Assessment Working Group to guide the development of financial monitoring activities. It appears that examiners and analysts are encouraged to think about risk when they perform their tasks, but it is not clear what this means in a US context. The NAIC also has established the Principles Based Reserving Working Group to assess changes in policies and practices. The group has initially focused on principles-based reserve requirements for life insurance companies, but the group's mandate is to ultimately expand its study to other aspects of regulating life-health and property-casualty insurance companies (NAIC 2008). Still, it is unclear as to how far and how fast US regulators would be willing to embrace a principles-based approach to insurer financial regulation. Without using dynamic financial analysis and employing other practices associated with a principles-based approach guided by a prudential philosophy, there are limits to what US regulators are likely to do in terms of true risk assessment.

Quantitative Regulations for Capital Requirements

The states impose two types of capital requirements on insurers. Each state has its own fixedminimum requirement.⁵ Insurers are also subject to uniform RBC requirements based on a complex formula developed by the NAIC. There are different formulas for property-casualty, life, and health insurers. An insurer is required to have capital that meets or exceeds the higher of the two standards. In the RBC formula, selected factors are multiplied times various accounting values (for example, assets, liabilities, or premiums) to produce RBC charges or amounts for each item. The charges are summed into several "baskets" and then subjected to a covariance adjustment to reflect the assumed independence of certain risks. The basic formula for property-casualty insurers is shown below:

Ro: Investments in affiliates

- R1: Fixed-income assets (interest rate and credit risk)
- R2: Equity assets (market value risk)
- R3: Credit (risk associated with reinsurance recoverables)
- R4: Loss reserves (risk associated with adverse loss development)
- R5: Premiums (risks of underpricing and rapid growth)

The RBC formula accounts for asset risks

 $RBC = 0.5[R0 + \sqrt{R1^2 + R2^2 + R3^2 + R4^2 + R5^2}]$

(components R1, R2, and R3) and insurance risks (components R4 and R5). There is also a component for the risk of default by affiliates and off-balance-sheet items, such as derivative instruments and contingent liabilities (R0). R1 accounts for the primary risks associated with fixed-income investments—the risk of default (that is, credit risk) and the risk of declines in asset values due to interest rate changes. In calculating R1 charges, assets are categorized by "credit quality," and the factors applied vary inversely with quality. R2 models the risk associated with the decline in the values of other investments, such as stocks or real estate, and assigns selected factors. R3 accounts for the credit risk associated with reinsurance recoverables and other receivables. R4 reflects the risk associated with adverse loss reserve development, and different factors are assigned for different lines of business based on their historical loss development patterns. Finally, R5 accounts for "underwriting risk," which is the risk that premiums collected in a given year may not be sufficient to cover the corresponding claims that arise from the business that is written. Different factors are also assigned in the R5 calculation for different lines of business based on historical loss ratios. The formula is much more complex than this simplified description indicates, but delving into its complexities is beyond the scope of this discussion.⁶

The covariance adjustment assumes that the R1 through R5 risks are independent but that the R0 risk is correlated with the other risks. This is an arbitrary assumption that is not necessarily consistent with reality (Butsic 1993). Multiplying the summed RBC amounts by 0.5 might raise the curiosity of some readers. This adjustment was simply intended to increase insurers' reported RBC ratios. As discussed later, an RBC ratio of less than 200 percent requires "company action." Hence, the operative RBC amount is twice the formula result, which negates the effect of the 0.5 adjustment in terms of regulatory compliance. The result is a framing issue and not a substantive outcome.

The RBC formulas for life and health insurers are similar, but they contain some differences to reflect the specific kinds of risks they face. The NAIC's life RBC formula encompasses five major categories of risk: (1) asset risk—affiliates (C0); (2) asset risk—other (C1); (3) insurance risk (C2); (4) interest rate risk, health credit risk, and market risk (C3); and (5) business risk (C4). In 2005, the NAIC did adopt a modeling approach to assessing the market risk, interest rate, and expense-recovery risk of variable annuities that are reflected in the C3 component. Insurers can use prepackaged scenarios developed by the American Academy of Actuaries or their own internal models. The RBC formula for health insurers includes: (1) asset risk—affiliates (H0); (2) asset risk—other (H1); (3) underwriting risk (H2); (4) credit risk (H3); and (5) business risk (H4).

An insurer's calculated risk-based capital (RBC) amount is compared to its actual total adjusted capital (TAC) to determine its RBC position.⁷ Under the RBC model law, certain company and regulatory actions are required if a company's TAC falls below a certain level of RBC.8 Four RBC levels for company and regulatory action have been established, with more severe action required for companies coming in at the lower levels (see Table 1). An insurer falling between the highest level (company action level) and the second-highest level (regulatory action level) is required to explain its financial condition and how it proposes to correct its capital deficiency to regulators. When an insurer slips below the second level, regulators are required to examine the insurer and institute corrective action, if necessary. Between the third level (authorized control level) and fourth level (mandatory control level), regulators are authorized to rehabilitate or liquidate the company. If an insurer's capital falls below the lowest threshold, regulators are required to seize control of the insurer.

The fact that an insurer's failure to meet specified RBC levels results in certain mandatory or authorized actions has important implications. For example, this limits a regulator's discretion to some degree. Arguably, this has contributed to regulators' caution in setting the RBC bar fairly low to avoid being compelled to take actions against an insurer that would not be warranted based on a more thorough and specific analysis of its financial condition and risk.⁹

While there has been some tweaking of the RBC formulas over the years, some of their components and factors have not been modified since their original construction. For example, the property-casualty R4 and R5 factors have not been changed since the formula was developed in 1993. In September 2007, an American Academy of Actuaries committee presented its recommendations to the NAIC for updated and refined factors for reserving and underwriting risks (American Academy of Actuaries 2007).

The complexity of the US RBC formula gives a false sense of accuracy. Most important, the US RBC formula takes a static approach based on historical, reported accounting values. Unlike systems that use some form of dynamic financial analysis (DFA), it does not look forward to consider how an insurer might fare under a range of future scenarios. Regulators rejected proposals to incorporate DFA when the formulas were being developed. Also, accounting values can either be erroneous or manipulated to obtain more favorable regulatory assessments. For example, Cummins, Harrington, and Klein (1995) observe that the formula encourages insurers to lower their loss reserves to reduce the associated RBC charge. As noted later, similar issues have existed in the EU

Further, while not all risks can be quantified, the formula omits some that can be, for example, operational risks, using methodological tools now

Action Level	Percent of ACL	Requirements
Company Action	200	Company must file plan.
Regulatory Action	150	Commissioner must examine insurer.
Authorized Control	100	Commissioner authorized to seize insurer.
Mandatory Control	70	Commissioner required to seize insurer.

Table 1: Risk-Based Capital (RBC) Action Levels

available. It is also important to note that the US RBC formula contains no explicit adjustment for an insurer's size or its catastrophe exposure.¹⁰ Factors for both were proposed in the initial development of the property-casualty RBC formula but were rejected. The NAIC is currently considering adding a catastrophe component to RBC, but this initiative is bogged down in a debate that is unlikely to be resolved any time soon.

The US RBC formula could benefit from using better methods to model some of the risks the formula attempts to measure or from developing improved factors for the formula.¹¹ Yet, while some elements of the formula could be improved, a more fruitful strategy would be to move toward some form of dynamic analysis that is tailored for a particular insurer's characteristics. Of course, there are limits to what any kind of quantitative methods can reveal, which underlines the importance of qualitative assessments in the overall solvency monitoring process. Such factors would include management competence, corporate governance, and internal risk management (Conference of Insurance Supervisory Services of the Member States of the European Union 2002).

Qualitative and Other Elements of Supervision

Capital standards are only one component of an extensive framework for the financial supervision of US insurers. This framework includes detailed rules governing virtually all aspects of insurers' financial structures and transactions, substantial financial reporting requirements, extensive monitoring, intervention against troubled insurers, receiverships, and insolvency guaranty associations. Here we primarily focus on the system of financial monitoring that augments capital standards and how regulators deal with companies that are in "hazardous financial condition." While many of these elements might not be normally associated with the second pillar of solvency regulation, they play an important role in augmenting capital standards in the US¹²

One element of US insurance regulation that is receiving considerable attention is the accounting treatment of reinsurance purchased from non-US reinsurers. Under current statutory accounting rules, non-US reinsurers must post collateral in order for US insurers to receive accounting credit for the risk transferred. The current US rules have been criticized for being unreasonable and inefficient (Cummins 2007). After a long debate, the NAIC recently adopted a new framework for determining reinsurers' collateral requirements. Under this new framework, US insurers may qualify as "national reinsurers" regulated by their home state. Non-US reinsurers may qualify as "port of entry" (POE) reinsurers by using an eligible state as a port of entry. A POE reinsurer will be subject to oversight by its port of entry supervisor. Both national reinsurers and POE reinsurers will be subject to collateral requirements that will be scaled according to something resembling a financial strength rating. Reinsurers receiving the highest rating will not be required to post collateral. US and non-US reinsurers that do not become qualified as national or POE reinsurers will remain subject to current state laws and regulations governing credit for reinsurance. An NAIC Reinsurance Review Supervision Division (RRSD) will be established to implement the new framework, including determining those states that will qualify as the supervisors for national and POE reinsurers.

Issues such as the treatment of foreign reinsurance become intertwined with solvency monitoring and regulators' assessment of an insurer's financial condition. Fundamentally, the objective of solvency monitoring is to ensure that insurance companies meet regulatory standards and to alert regulators if actions need to be taken against a company to protect its policyholders. Solvency monitoring encompasses a broad range of regulatory activities, including financial reporting, early-warning systems, financial analysis, and examinations.¹³ In the US, insurers file annual and quarterly financial statements, which serve as the principal sources of information for the solvency monitoring process, but a number of other special reports are filed and used in regulatory monitoring.¹⁴ Accounting rules take on added importance because accounting values become the principal measures that determine whether an insurer is complying with regulatory standards. Regulators also have broad authority to compel insurers to provide other information deemed necessary to assess their financial condition.¹⁵

The reports filed by insurers are subject to a "bench," or "desk," audit by an in-house financial analyst or examiner who assesses the information's accuracy and reasonableness and determines whether an insurer requires further investigation.¹⁶ Typically, an insurer's domiciliary regulator performs the most extensive review of its financial information, but an insurer must file financial reports with every state in which it is licensed, and non-domiciliary regulators also may review these reports. Additionally, the NAIC scrutinizes insurers' financial statements and disseminates its analysis to state insurance departments.¹⁷ This reflects the multilayered nature of financial regulation and monitoring of US insurers-the domiciliary regulator constitutes the first layer, and nondomiciliary regulators and the NAIC constitute successive layers. Some might question whether this multilayered regulation and monitoring is redundant, but in the US system it is viewed as essential to assure that domiciliary regulators are taking appropriate actions against insurers in financial distress.

US regulators rely heavily on early-warning systems and other financial analysis tools in their monitoring activities. The fact that RBC standards are relatively low make financial monitoring

particularly important because an insurer could be in financial distress and still exceed its RBC requirement. For the most part, these systems and tools are based on static, quantitative financial ratios. There is some use of qualitative information, but this appears to be limited and also may vary among the different states. The linchpins of US monitoring are the Insurance Regulatory Information System (IRIS) and the Financial Analysis Solvency Tools (FAST) system. IRIS is comprised of twelve to thirteen financial ratios (depending on the type of insurer), and its results are made available to the public. Normal ranges are set for each ratio. Ratio results that fall outside these ranges and other criteria can trigger further regulatory investigation.

In the early 1990s US regulators concluded that IRIS was inadequate, which led to the development of the FAST system. In the NAIC's explanation of its systems, FAST comprises the full array of its solvency monitoring tools (including IRIS), but its heart is a computerized analytical routine called the "scoring system." The scoring system consists of a series of approximately twenty financial ratios based on annual and quarterly statement data, but, unlike the IRIS ratios, it assigns different point values for different ranges of ratio results. A cumulative score is derived for each company, which is used to prioritize it for further analysis. These scores are provided to all regulators but are not available to the public.¹⁸

Importantly, NAIC analysts use these scores and other information to identify companies that deserve special attention.¹⁹ This can lead to a process in which the NAIC's Financial Analysis Working Group will query a domiciliary regulator about a company's status and steps being taken to address any problems it may have. If the NAIC group determines that a domiciliary regulator is taking all appropriate actions, then the group will either close the file or continue to monitor the company. If the working group determines otherwise, it can compel the domiciliary regulator to take the actions the group deems necessary. The working group's power does not stem from any direct regulatory authority. Rather, its power stems from the authority of nondomiciliary regulators to suspend or terminate an insurer's license to write business in their jurisdictions. This could effectively force the domiciliary regulator's hand, as license suspensions and terminations would quickly lead to a company's demise and propel it into receivership.

Regulators use additional tools and information in their financial monitoring activities. They can use the NAIC's "Insurer Profiles System" and may also develop their own customized financial ratios. Both periodic (every three to five years) and targeted company financial examinations are conducted; targeted exams are performed to address specific questions or concerns that arise from bench audits and analysis.²⁰ Additional sources of information may be tapped, including Securities and Exchange Commission (SEC) filings, claimspaying ability ratings, complaint ratios, market conduct reports, correspondence from competitors and agents, news articles, and other sources of anecdotal information. While a wide array of information sources are available, it appears that US regulators rely primarily on quantitative data and tools, as well as financial examinations. This is consistent with a prescriptive, rules-based approach as most rules are stated in quantitative terms. Importantly, US regulators tend not to engage in consultations with an insurance company's management to assess its competence and future plans. Further, regulators do not perform any kind of dynamic financial analysis nor require companies to do so.²¹

There are two categories of regulatory actions with respect to troubled companies: (1) actions to prevent a financially troubled insurer from becoming insolvent and (2) delinquency proceedings against an insurer for the purpose of conserving, rehabilitating, reorganizing, or liquidating the company. Actions within the first category include hearings and conferences, corrective plans, restrictions on activities, notices of impairment, cease and desist orders, and supervision. Some of these actions may be conducted informally; others require formal measures. Similarly, some actions against companies may be confidential, and others may be publicly announced. Regulators can negotiate sales or mergers of troubled insurers in order to avoid market disruptions. This is often more feasible for life-health insurers because of the embedded value of their long-term contracts.

If preventive regulatory actions are too late or are otherwise unsuccessful and an insurer becomes severely impaired or insolvent, then formal delinquency proceedings will be instituted. These measures can encompass conservation, seizure of assets, rehabilitation, liquidation, and dissolution. For many insurers, these actions are progressive. A regulator may first seek to conserve and rehabilitate a company to maintain availability of coverage and to avoid adverse effects on policyholders and claimants, as well as lower insolvency costs. The regulator, however, ultimately may be forced to liquidate and dissolve the company if rehabilitation does not prove to be feasible. This is often the case with property-casualty insurers that have already dug themselves into a deep hole by the time regulators seize control.

One question that is difficult to answer is how much leverage regulators can exercise in compelling an insurer to lower its financial risk if it greatly exceeds its RBC requirement and complies with all regulations from a quantitative perspective. In theory, regulators can act against any company deemed to be in "hazardous financial condition." However, regulators would bear the burden of proof if an insurer resisted corrective action that ultimately would have to be resolved in court. In practice, when regulators initiate formal actions, an insurer's problems are sufficiently obvious that the courts typically approve such actions. What we cannot observe is regulators' power to impose their will in informal actions that are not subject to public disclosure.

Insurer receiverships involving liquidation can be long and protracted affairs that are largely controlled by the domiciliary regulator. An in-house or outside receiver is appointed to manage all aspects of the receivership, including the disposition of claims and the marshalling and selling of assets. Further, receiverships are typically administered through state rather than federal courts. Historically, receiverships have tended to be very opaque to outsiders, and very little information is conveyed to various stakeholders and the public. Significant concerns have been raised that receivers sometimes unnecessarily prolong and milk their receiverships for their own financial gain. It is difficult to assess the severity of this problem because of the lack of public information and oversight, but research suggests that the receivership system increases insolvency costs (Grace, Klein, and Phillips 2002b).

An insurer's liquidation can trigger the involvement of insurance guaranty associations (GAs). Each state has separate guaranty associations for property-casualty and life-health insurers. These associations cover a portion of the insolvent insurer's unpaid claims obligations. Each state's guaranty association covers the unpaid claims in that state regardless of where the insolvent insurer is domiciled.²² Only certain lines of insurance are covered, and there are limits on the amount of coverage for each claim.²³ Insurance policies purchased by individuals and small businesses tend to have greater coverage than insurance purchased by large commercial buyers.²⁴ Those with unpaid claims and other creditors stand in a long queue to seek recovery against the estate of an insolvent insurer and inevitably will receive only a portion of their claims, if anything.

All licensed insurers are required to belong to the GAs in the states in which they operate and to cover GA claims payments. Depending on state laws and the type of insurance, insurers may be able to recoup all or a portion of these assessments through rate surcharges and premium tax credits; these recoupment provisions vary by state and the type of insurer. Insurers also may deduct residual costs in calculating their federal income taxes. Baresse and Nelson (1994) estimated that the burden of GA assessments is distributed among different groups as follows: taxpayers, 54 percent; policyholders, 21 percent; and equity holders, 25 percent.

Guaranty associations have been criticized for creating moral hazard among insurance buyers and reducing market discipline (Cummins 1988; Lee, Mayers, and Smith 1997). It is difficult to determine how severe this problem is. Personal lines buyers may be unaware of GA coverage or simply may assume that the government will make them whole if their insurer goes bankrupt. Commercial insurance buyers, presumably, are savvier and understand their exposure. Arguably, market discipline should be stronger in commercial lines markets where GA coverage is limited or nonexistent and buyers are better positioned to assess the financial risk of insurers (Epermanis and Harrington 2006). Some have proposed that US GA assessments (or premiums) should be risk based to diminish the moral hazard problem. However, these proposals have been rejected by regulators who question their feasibility and likely benefits.

Transparency and Market Regulation

In the US, transparency is a mixed bag. Insurers' financial statements and certain other reports are available to the public; however, any regulatory assessments of an insurer's financial condition and risk are confidential, and there is no distribution of any internal analysis a company may have performed. At the same time, rating agencies play an important role in informing buyers, intermediaries, and other stakeholders about insurers' "claimspaying ability." Rating agencies use reports filed with regulators and other information provided by insurers to grade their financial conditions. They also employ qualitative methods to a greater degree than regulators. The agencies' ratings and analysis are made available to the public in a form that is easier to interpret than insurers' financial statements. Hence, they are critical facilitators of market discipline. However, a significant number of insurers are not rated by a major rating agency (for example, A.M. Best only provides letter grade ratings for two-thirds of the companies listed in its Best's Key Rating Guide).

Regulating insurance markets (such as prices, products, and trade practices) is fairly extensive in the US Regulating an insurer's market practices is principally delegated to each state in which it operates. Hence, each state effectively regulates its insurance markets. The scope of market regulation is broad (potentially encompassing all aspects of an insurer's interactions with consumers), and the states' policies vary significantly. State regulation of insurers' prices or rates is a particularly visible and controversial topic. The rates for personal auto insurance, homeowners insurance, and workers' compensation insurance are subject to some level of regulation in all the states, but the degree to which regulators seek to constrain prices differs.²⁵ The extent of price regulation for other commercial property-casualty lines tends to vary inversely with the size of the buyer; markets populated by large buyers are subject to less regulation. The rates for certain types of health insurance may be regulated, but the prices of life insurance, annuities, and related products are only indirectly regulated through the product approval process.

Insurers' policy forms and products also are closely regulated, with the exception of products purchased by large firms. Regulators must pre-approve most policy forms (except those for large buyers) before they are offered in the market. Other aspects of insurers' market activities—such as marketing, underwriting, and claims adjustment—generally fall within the area of "market conduct" regulation. A state may impose some specific rules regarding certain practices, such as constraining an insurer's use of certain factors in underwriting or mandating that they offer coverage to all applicants.²⁶ Beyond this, regulation tends to be aimed at enforcing fair practices based on regulators' interpretation of what this means.²⁷ Further, intermediaries must obtain a license in every state in which they sell insurance and are subject to certain regulations regarding their conduct and continuing education requirements.

The scope, nature, and variety of market regulations raise questions about their necessity, efficiency, costs, and benefits. Most experts agree that some level of market conduct regulation is warranted, such as rules and sanctions against abusive marketing practices. Beyond that, there is considerable disagreement about other market regulations. Insurers and economists generally agree that price regulation is unnecessary (and potentially harmful) given the highly competitive nature of insurance markets, but many regulators have a different view. Excessive constraints on insurance products, including mandated benefits or coverages, raise costs and stifle choice as well as innovation. Intrusive interference with other aspects of insurers' activities, especially underwriting and claims adjustment, create additional problems. Some of these policies may arise from regulators' and legislators' sincere belief they are necessary to protect consumers. Others are likely politically motivated to appeal to consumers or other interest groups.

There have been some efforts to lessen and streamline market regulation. For example, many states have deregulated commercial lines insurance rates and products that buyers, as well as insurers, have advocated. More states, in recent years, have moved to competitive rating systems for personal lines insurance. Further, the NAIC has established centralized filing systems for propertycasualty rates and policy forms, and life insurance policy forms. While these steps have been helpful, many insurers believe they are inadequate. Each state still retains its authority to impose its specific rules as well as approve the rates and policy forms that insurers are required to file.²⁸ This reality has motivated many insurers to advocate some form of federal regulation.²⁹ Even insurers that do not support federal regulation advocate deregulation of insurance prices and other aspects of their market activities.

Empirical Evidence on the Effectiveness of Regulation and Market Discipline

Empirical research and evidence on the effectiveness of insurance regulation fall into several categories. A handful of studies have looked at the effect of regulation on insolvency costs. Many more studies have tested the ability of RBC and/ or regulatory early warning systems to predict insolvencies, separately or in conjunction with other predictors. And extensive research has considered the effects of price regulation in personal auto insurance and workers' compensation insurance. A full literature review is beyond the scope of this paper, but we can briefly summarize research findings and other empirical evidence.

Studies have found that the relative cost of insolvencies is much higher for insurance companies than for banks. Grace, Klein, and Phillips (2002b) estimated the average cost of property-casualty insurer insolvencies (over the period 1986–1999) to be \$1.10 per \$1 of pre-insolvency assets.³⁰ Nonregulatory factors probably account for some of the disparity; the operative question is whether regulatory policies also contribute to higher insurer insolvency costs. Willenborg (2000) and others point to the problem that regulators' ability to tap guaranty associations to cover insolvency costs could induce excessive forbearance in their deal-

ings with troubled insurance companies.³¹ Grace et al. (2002b) found evidence of three major factors contributing to higher insurer insolvency costs: (1) the financial condition of an insurer prior to insolvency and its managers' moral hazard incentives; (2) regulatory forbearance; and (3) regulatory management of insurer receiverships. They suggest that improved financial monitoring and greater transparency surrounding domiciliary regulators' intervention and receivership management could reduce insolvency costs.³² Some might also argue that measures that would facilitate greater market discipline would be beneficial and potentially would reduce the need for stricter regulatory standards, at least in certain markets (Harrington 2004; Epermanis and Harrington 2006).

This brings us to the question of the accuracy of RBC and regulatory financial monitoring systems. Numerous studies have tested various indicators or predictors of insurer insolvencies. Some of these studies have found that RBC ratios make a marginal contribution to insolvency prediction, at best. Although an insurer's RBC ratio is not intended to be an insolvency predictor, this research raises questions about the accuracy and effectiveness of RBC standards.

Using logit analysis, Cummins, Harrington, and Klein (1995) tested alternative models that employed RBC in some form to predict insolvent (and solvent) property-casualty insurers and their tradeoffs with respect to Type 1 errors (failed insurers not predicted to fail) and Type 2 errors (surviving insurers predicted to fail). They found that less than one-half of the companies that became insolvent had TAC less than the company action level one to three years prior to its failure. They also found that a model that allowed the weights of the RBC components to vary and that included firm size and organizational form produced a material improvement in the Type 1/Type 2 error tradeoff relative to a model that used an insurer's RBC ratio as the sole independent variable. Cummins et al. (1995) developed further empirical evidence of the deficiencies of the RBC formula.

The NAIC's FAST scoring system has fared better than RBC in these studies, which is not surprising but is still important in assessing their relative contributions to solvency oversight. Grace, Harrington, and Klein (1998a) found that FAST scores are more accurate than RBC ratios in identifying property-casualty insurers that become insolvent. The FAST system had a success rate of between 40 and 91 percent in predicting property-casualty insolvencies, depending on the data sample used and the specified Type 1 error rate (ranging from 5–30 percent).³³ In a second study, Grace, Harrington, and Klein (1998b) found that the FAST system was somewhat less accurate for life-health insurers, but its performance might be improved by adjusting the FAST scoring system based on empirical analysis.

These and other studies have found that financial monitoring could be further improved by incorporating more information and better methods, such as financial strength ratings and cash-flow testing (Cummins, Grace, and Phillips, 1999; Pottier and Sommer 2002). The cash-flow simulation used by Cummins et al. (1999) comes closest to the DFA approach we discuss; its significant explanatory power in insolvency prediction tests lends support to its consideration in determining capital adequacy and financial monitoring. It is difficult to estimate the effect of using more qualitative methods and information, as these things do not lend themselves as easily to empirical testing. The predictive value of claimspaying ability ratings comes closest to indicating the potential contribution of qualitative analysis, which is a part of the rating process.

The empirical case against insurance price regulation is strong. There is a long line of studies evaluating the effects of rate regulation in personal auto insurance dating back to the 1970s. The whole of the literature indicates that regulation does not benefit consumers by providing them with consistently lower premiums.³⁴ However, the evidence also shows that regulators can cause significant market distortions if they seek to substantially constrain insurers' rates. The negative effects of such policies include cutbacks in the supply of insurance, coverage availability problems, diminished quality of service, and higher claim costs.

For example, a recent study by Derrig and Tennyson (2008) found that Massachusetts's strict rate controls for auto insurance increased claims costs by 44–50 percent and regulation-imposed cross-subsidies increased claims costs in towns that were "subsidy receivers." Danzon and Harrington (2001) found similar effects in the regulation of workers' compensation insurance rates. A study by Klein, Phillips, and Shiu (2002) also found that stricter price regulation induces insurers to hold less capital that would be subject to regulatory expropriation.

When these kinds of regulatory policies are taken to the extreme, they can create severe market problems. Several state auto insurance markets experienced severe problems before the resulting crises compelled regulatory reforms. Consequently, studies have shown that deregulating prices in such markets have greatly improved the supply of insurance and their overall efficiency.³⁵

Broader studies that consider the full scope of insurance regulation and its effects in the US are harder to come by. A number of studies have looked at the efficiency of US property-casualty insurers and life-health insurers, but most have not attempted to assess the effect of regulation on insurers' efficiency. Ryan and Schellhorn (2000) found that efficiency levels in the life insurance industry did not change after RBC standards were implemented. This is not necessarily surprising, as the vast majority of insurers already met the new standards when they were implemented.

A more recent study by Pottier (2007) found

that life insurers' efficiency decreases as the number of states in which they operate increases. This inefficiency arises from several sources, including compliance costs, delays in introducing new products, regulatory barriers to entering state markets, and other constraints that inhibit competition. It also reflects the combined effects of state regulatory policies and a state-based framework. Pottier also found that a significant number of life insurers are operating below the minimum efficient scale for the industry, consistent with the findings of prior studies. It appears that most of the higher costs associated with this inefficiency are passed on to consumers through higher premiums. Grace and Klein (2007) concluded that creating an optional federal charter for life insurers would increase the industry's competitiveness and efficiency and facilitate greater consolidation that would enable more companies to achieve higher economies of scale.

Insurance Regulation in the European Union

Since the mid-1990s, the EU financial services markets have undergone significant deregulation. Specific to the insurance industry, a fundamental market change resulted from the introduction of the EU's Third Generation Insurance Directive in 1994. Prior to the directive, the European insurance business was mostly embedded in a dense regulatory network. Insurers were subjected to significant requirements on contractual characteristics leading to uniformity in products and limiting competition (for a discussion of the situation before 1994, see Farny 1999; Rees et al. 1999). Implementing the 1994 deregulation, however, yielded intensive price competition, margin erosion, and cost pressure (Hussels et al. 2005).

Quantitative Regulations for Capital Requirements

The Third Generation Insurance Directive of 1994 did not directly address solvency issues. Instead, the directive recommended that the rulesbased set of minimum capital requirements introduced in the 1970s be reviewed. The European Commission, the body responsible for proposing legislation in the EU, responded with a "framework for action" for financial services. According to this plan, EU solvency regulation should be harmonized and reformed in two steps, called Solvency I and Solvency II. Solvency I regulations went into effect for member nations by January 2004, slightly modifying the existing solvency margin requirements, and mostly focusing on coordination issues (EU Directive 2002/13/EC for non-life insurers; EU Directive 2002/83/EC for life insurers; see European Union 2002a, 2002b). A limitation of these requirements is that they are derived by volume numbers such as premiums or claims, rather than being based on the insurer's specific risk situation, often leading to undesired incentives. For example, through underpricing, an insurer lowers its capital requirements because its premiums are lower even though its risk has grown, all else equal. Volume-based requirements are easy to apply, but as has been mentioned often in the literature (Farny 1997), they tend to be too crude and their theoretical foundation too weak to achieve good risk management.

Largely in response to these problems, the European Commission initiated Solvency II, with the primary goal of developing and implementing harmonized risk-based capital standards across the EU. The intent is to focus on an enterprise risk management approach toward capital standards, meaning that it will provide an integrated solvency framework that covers all relevant risk categories and the dependencies across them. Solvency II's current schedule is as follows: in July 2007,

the European Commission published a framework directive (EC 2007a), which has been under discussion in the parliament and industry. The EU parliament approved this directive's final draft in April 2009. The next step is for each member country to implement the EU rules into national law. Solvency II should then become the general norm for insurance regulation in the EU by 2012. Most parts of Solvency II are already in place, and although modifications are still possible, major changes seem very unlikely. The implementation of Solvency II is well organized and on schedule, but as the political process is not predictable, there still might be a number of obstacles that the EU regulators have to overcome before Solvency II will be the new standard. However, compared to the situation in the US where a major reform currently seems far away, there is a broad consensus among the EU countries that it is time for a broad reorganization of the solvency standards. This consensus is shared not only by regulators but also by politicians and in the industry (Steffen 2008).

A number of institutions are involved in setting Solvency II standards. Most notable is CEIOPS, which is responsible for managing the entire process. Among other efforts, CEIOPS is undertaking comprehensive consultations with all market participants, in which suggestions for future solvency rules are collected and discussed. They are also undertaking quantitative impact studies, in which the proposed rules are tested. Our view is that the institutions are providing mechanisms for interested parties to participate in rule development, as well as mechanisms to anticipate the effects of the ultimate outcomes.

All indications are that the final Solvency II regulation will be very similar to the corresponding regulation in the banking industry, Basel II (Basel Committee on Banking Supervision 2001). Both are based on three pillars: (1) quantitative requirements, (2) qualitative requirements and supervision, and (3) supervisory reporting and

public disclosure. Under the first pillar-the quantitative requirements-each insurer's available capital is compared to standards. The first level is the minimum capital requirement (MCR), a minimum amount of equity capital that an insurer must hold. The second level is the solvency capital requirement (SCR), also called "target capital," which is intended to represent the economic capital the insurance company needs to run its business within a given safety level. In the context of Solvency II, the economic capital is derived by value-at-risk at a 99.5 percent confidence level over a one-year time horizon. In determining the SCR, all relevant risk categories are covered, that is, insurance, market, credit, and operational risk. Furthermore, risk mitigation techniques applied by insurers (such as reinsurance and securitization) are taken into account. The MCR will be a fraction of the SCR, although the precise value is not yet determined. One option is for the MCR to equal one-third of the SCR, the socalled "compact approach." A second option is for the MCR to be measured as value-at-risk, similar to the SCR, but calibrated at a 90 percent confidence level instead of 99.5. This second method is called the "modular approach" (CEIOPS 2006). A minimum floor for the MCR is also established at about €2 million for life insurers and €1 million for non-life and reinsures (European Commission 2007a, 118).

Regulators are considering several methods to calculate MCR and SCR. One is to use a standard model that is given by the regulator. Another is to use an internal model, which the insurer itself develops and which might be used for the target capital calculation after being approved by the regulator. Internal models offer a number of advantages, including that they are individualized and therefore can be made to fit the insurer's specific needs, rather than a one-size-fits-all standard model. Another advantage is that internal models might trigger innovation in insurer risk management practices. Furthermore, the option to use internal models provides the insurer an opportunity to integrate regulatory requirements into its risk management process. Regulatory and business objectives then go hand in hand and lead to more efficient regulation and risk management (Financial Services Authority 2007). For all these reasons, large insurers are likely to use internal models. Some small insurers, however, might not have sufficient personnel and financial resources to develop such internal models, leading them to prefer a standard model. Yet even standardized models allow for some use of personalized parameters while providing standardized simplifications for small and medium-size enterprises (European Commission 2007b, 9).

Both with standard models and internal models, assets and liabilities must be estimated at market values. Relying on market values should ensure a realistic picture of an insurer's risk capacity, especially compared to a situation where balance sheet values are used for regulatory purposes. As can be seen in the left part of Figure 1, two values need to be estimated: the market value of the liabilities and the market value of the assets. The market value of the assets minus the market value of the liabilities gives the available solvency margin. Estimating these market values is not trivial, especially if no market prices are available. In this context, determining the market value of the assets is easier than estimating the market value of the liabilities. Calculating the market value of liabilities, referred to as the "technical provisions," is based on their current exit value, that is, the amount necessary to transfer contractual rights and obligations today to another undertaking (Esson and Cooke 2007; Duverne and Le Douit 2007). The technical provisions are then given as the best estimate of the liabilities plus a cost-of-capital–based risk margin.

A market-consistent valuation of risk requires the implementation of sound financial methods that account for the relevant sources of uncertainty in the cash flows. Future cash flows must therefore be estimated and risk adjusted either by reducing the cash flow and discounting with a risk-free interest rate or by discounting with a risk-adjusted discount rate. Estimations of future cash flows are complicated by the number of options in the



Figure 1: Pillar I of Solvency II

insurance contracts, often requiring the use of option pricing methods to incorporate these in the estimation process. Solvency II thus supports the use of modern financial tools in insurer risk management processes.

After estimating the market values of assets and liabilities, adequate estimators to describe the risk of loss or of adverse change in the value of assets and liabilities need to be found. Under the Solvency II SCR standard formula, individual risk modules cover different risk types, that is, one module estimates underwriting risk (with three sub-modules for life, non-life, and health), a second estimates market risk, and a third estimates counterparty default risk. These three risk modules are aggregated to the so-called basic solvency capital requirement (BSCR). A capital requirement for operational risk (OpRisk) and an adjustment for the loss-absorbing capacity (LAC) of technical provisions and deferred taxes are added to the BSCR, yielding the following SCR formula (European Commission 2007a, 105 and 323):

The factor Corr_{ii} denotes different items in a

$$SRC=BSCR + OpRisk+ LAC =$$

$$\sqrt{\sum \sum_{i,j} Corr_{ij} \cdot SCR_{i} \cdot SCR_{j}} + OpRisk+ LAC$$

correlation matrix given by the regulator (European Commission 2007a, 324). Underwriting risk, market risk, and counterparty default risk are thereby correlated among each other, but these three are independent of operational risk. All risk modules are further subdivided; for example, the underwriting risk modules for non-life and health are subdivided in two sub-modules (European Commission 2007a, 107):

 Premium and reserve risk: the risk of loss, or of adverse change in the value of insurance liabilities, resulting from fluctuations in the timing, frequency, and severity of insured events, and in the timing and amount of claim settlements.

• Catastrophe risk: the risk of loss, or of adverse change in the value of insurance liabilities, resulting from significant uncertainty of pricing and provisioning assumptions related to extreme or exceptional events.

For life insurers, sub-modules such as mortality, longevity, disability-morbidity, or lapse risk are considered. The market risk module contains sub-modules for interest rate risk, equity risk, property risk, spread risk, concentration risk, and currency risk. When appropriate, the SCR standard formula also allows the use of insurer-specific parameters and standardized simplifications for small and medium-sized insurers.

Depending on the relationship between the amount of available capital to the SCR and MCR, there are three levels of regulatory intervention. When the available capital is above the SCR, there is no intervention. If the available capital is below the SCR but above the MCR, the regulator will take action aimed at restoring the insurer to a healthy condition. If the available capital is below the MCR, the regulator will revoke the insurer's license. This will be followed either by liquidating the insurer's in-force business or by transferring the insurer's assets and liabilities to another insurer (European Commission 2007b, 5).

Importantly, Solvency II follows a principlebased approach instead of using strict rules such as those required in the US risk-based capital standards. A major drawback of standard rulesbased models is their lack of flexibility to handle individual situations, limiting the ability to assess the wide range of insurance risk profiles. Rulesbased approaches also increase the possibility of a systemic problem arising from the entire industry responding to a condition in the same or similar way. Principles-based regulation should encourage greater levels of individuality. But these advantages do not come without drawbacks. Relying upon principles increases the complexity and costs of regulation, both for the insurer, who needs time and resources to implement the principles into a model, and for the regulator, who needs sufficient resources to control all the individual models instead of one standard model. Furthermore, a lack of precise guidelines could create inconsistencies in the application of standards across organizations and thereby reduce comparability (see Toppe Shortridge and Myring 2004 for a related discussion in accounting). This problem is especially relevant if principles are not properly enforced (see Black et al. 2007 for more details on the pros and cons of principle-based regulation).

Qualitative Elements of Supervision

The developers of Solvency II recognize the need for qualitative assessment in addition to the quantitative capital requirements described in the last section (Conference of Insurance Supervisory Services of the Member States of the European Union 2002). This need is highlighted by results from a study of twenty-one insurer failures (and a larger set of near failures) in the EU, which demonstrated that the fundamental causes of insurer insolvencies are management error rather than undercapitalization (Ashby et al. 2003). Based on these findings, Ashby et al. (2003) recommend a number of regulatory responses to bolster internal controls, most of which involve on-site inspections, offering expert advice, and similar actions that respond to specific situations rather than imposing universal requirements.

Such qualitative requirements represent the second pillar of the Solvency II framework and thus one of the building blocks of the new regulatory framework. The underlying theory of the second pillar is that the risks recognized by quantitative models in the first pillar must be handled with appropriate processes and decisions in the context of a management system. Quantitative models alone are insufficient. The central instrument of the second pillar is the supervisory review process (European Commission 2007a, 7). This supervisory review comprises an evaluation of the strategies, processes, and reporting procedures established by the insurer as well as the risks the insurer faces or may face and its assessment ability. The regulator also reviews the adequacy of the insurer's methods and practices to identify possible events or future changes in economic conditions that could have unfavorable effects on its overall financial standing.

An example of the requirements within the second pillar is that all insurers should have a regular practice of assessing their overall solvency needs with a view to their specific risk profile (referred to as the "own risk and solvency assessment"; see European Commission 2007a, 9). The supervisory authority reviews results of this internal assessment process as a part of the supervisory review process. The review process also includes outsourced activities. To do that, the supervisor must have a right to access all relevant data held by the outsourcing service provider as well as the right to conduct onsite inspections of the outsourced activity, even if the outsourcing service provider is an unregulated entity in a third country.

In order to make this supervisory process efficient, regulators again need to have sufficient resources, including a follow-up process to review their findings. Furthermore, effective regulation requires appropriate monitoring tools that enable deteriorating financial conditions to be identified and remedied. As a result of the supervisory review process, the regulator might require the insurer to hold more capital than the SCR determined under pillar one of Solvency II. The regulators can thereby compel an insurer to undertake remedial actions if the qualitative analysis reveals problems even if the insurer exceeds its SCR. This is especially relevant when the standardized formula does not entirely reflect an undertaking's specific risk profile (European Commission 2007a, 69). The capital add-on must be reviewed at least once a year.

Although EU regulators are working diligently to prevent insolvencies, a fundamental principle of Solvency II is that regulators will not prevent insolvencies at any price. As shown, the capital requirement is based on a ruin probability of 0.5 percent. In reverse this means that the insurer will fail on average once in two hundred years (or one out of every two hundred insurers will fail this period). Of course, increasing these requirements to 0.1 percent would increase the insurer's capital requirement and its costs. To assess the benefit of increasing capital requirements, these costs should be compared to the costs of a failure. The use of guaranty mechanisms must also be considered. Solvency II does not cover guaranty mechanisms, but they are generally available in the EU member countries. An example is the Protector and Medicator Fund in Germany (for life and health insurance contracts) and the Financial Services Compensation Scheme in the UK (which covers life and most general insurance policies, such as motor, home, and employers' liability insurance; reinsurance, marine, aviation, transport business, and credit insurance is not covered). A good overview of the variation across EU guaranty mechanisms can be found in OECD (2002, 50-53). Existing guaranty schemes are not affected by the introduction of the Solvency II rules.

Market Entry, Rate Regulation, and Profit Distribution

Beyond solvency regulation, other classic fields of supervision include market-entry regulation, rate regulation, and profit regulation. Regulating market entry, premiums, and profits were very common in the EU until the 1994 deregulation. Today most of these regulations do not exist although differences continue among the EU member countries and across some regulated fields in the national markets.

With the 1994 introduction of the so-called "country-of-destination principle," market entry regulation has been simplified significantly throughout the EU. Once an insurer receives a license from a regulator to sell insurance products, that license is valid for all other member countries. To obtain a license, insurers must fulfill certain requirements, such as holding the absolute minimum capital required ($\in 2$ million for life, $\in 1$ million for non-life and reinsures) and submitting a business plan covering the next three years. Life insurers are also required to hire an actuary responsible for calculating premiums and reserves in line with regulations.

Direct rate regulation was common in the EU until 1994, but was then eliminated with the introduction of the Third Generation Insurance Directive. Some member countries, however, still regulate other conditions that affect the determination of insurance premiums. An example is the automobile insurance bonus-malus system in France (Dionne 2001). While there are no regulations governing the pricing of a contract, the premiums are adjusted by a bonus-malus coefficient that takes into account the driver's past experience. These bonus-malus coefficients are set by law. Even though they set barriers on insurers, these rules are completely known; insurers can anticipate them and therefore incorporate them into the pricing process, so the competition in French automobile insurance continues even if constrained.

Many country-specific differences in the EU emerge from the fact that the individual states still regulate contract law. EU legislators tried to harmonize contract law, but due in large part to the divergent histories and underlying theories of the legal systems in the EU member countries, insurance contract law has not yet been harmonized. A number of differences in contract terms, therefore, can be found in the EU countries. Examples are the right of withdrawal, disclosure requirements, and documentation requirements that might differ among EU countries. In some lines of business the freedom of contract is restricted. An example is that in Germany, Denmark, and Italy, automobile third-party liability insurers are obliged to enter into a contract with the customer; that is, they are not allowed to refuse an applicant. Nor are insurers in these countries allowed to discriminate among customers in order to separate good risks from bad risks. Such an obligation to enter into a contract is not known in other EU automobile third-party liability insurance (Basedow and Fock 2003).

Another example is surplus participation, a kind of profit regulation that still exists in the German life insurance industry (Rees et al. 1999, 373). According to "surplus participation," life insurers are obliged to share their annual profit between the policyholders and the shareholders in designated ways. At least 90 percent must be paid out to the policyholders, while shareholders can take no more than 10 percent. Contract terms are also strictly regulated in the German automobile insurance market, limiting competition to pricing differentials rather than to contractual distinctions. Yet even with these various regulatory constrictions, regulation in the EU insurance industry is not too extensive, especially compared to the situation before the deregulation in 1994.

Insurer receivership is another field not yet harmonized in the EU. Although the EU developed receivership rules in 2000, insurance undertakings and credit institutions were excluded from the regulation. Justification for excluding insurance and credit organizations was based on the extremely wide-ranging powers of intervention held by national supervisory authorities, as well as on the existence of special arrangements for insurance and credit institutions within country-specific legislation (Council Regulation [EC] no. 1346/2000, Article 9; see European Union 2000). Considering German law as an example, the receivership process is comparable to that in the US, especially in the dominant role of the domiciliary regulator. A major difference, however, is that the process runs through the court of bankruptcy rather than the insurance supervisor. The court nominates a representative who manages all aspects of the receivership in the case of an insurer's failure (German Insurance Supervision Act, Article 78; see BaFin 2009). We are unaware of any research on the relative efficiency of the receivership system in the EU

Empirical Evidence on the Effectiveness of Regulation and Market Discipline

While numerous studies test the US solvency model and consider other aspects of US supervision, very few studies employ European data to analyze supervision-related questions. One exception is the field of efficiency analysis (data envelopment analysis, stochastic frontier analysis; see Eling and Luhnen 2009) where a number of studies test the influence of regulation in the European insurance markets:

- Rees et al. (1999) found modest efficiency gains from deregulation for the UK and German insurance markets for the period from 1992–1994.
- Mahlberg (2000) identified decreasing efficiency for Germany considering life and property-liability insurance for the period of 1992–1996, but an increase in productivity.
- Diacon et al. (2002) observed decreasing efficiency for the years 1996–1999 considering non-life insurers from fifteen different countries.
- Ennsfellner et al. (2004) established strong evidence that deregulation had positive effects on the production efficiency of Aus-

trian insurance companies for the period of 1994–1999.

- Cummins and Rubio-Misas (2006) found evidence of total factor productivity growth in Spain for the years 1989–1998, with consolidation reducing the number of firms in the market.
- Hussels and Ward (2006) did not identify clear evidence for a link between deregulation and efficiency, again for the UK and German insurance markets during the period 1991–2002.
- Fenn et al. (2008) observed decreasing costs and increasing returns to scale for a large number of EU insurance companies. They concluded that mergers and acquisitions, facilitated by the liberalized EU market, have led to efficiency gains.

The aim of the 1994 deregulation in the financial services sector was to improve market efficiency and enhance consumer choice through more competition. As can be seen from this discussion, the evidence on efficiency gains due to deregulation is quite mixed. The limited evidence for single countries and the limited number of years of data to study, however, indicates that much future research is needed to provide general evidence regarding European systems and/or experiences that would provide useful input in developing an appropriate European solvency regime. Thus there is need for further research.

Another aspect of efficiency that has been analyzed in academic literature is the efficiency of the French pricing system, including the previously discussed bonus-malus regulation. Dionne (2001) showed that the variables used under the bonus-malus system (such as age, sex, and driving experience) efficiently deal with adverse selection. Moreover, he demonstrated that the resulting bonus-malus variable is significant in explaining both the individual distribution of accidents and the individual choice of insurance coverage. He concludes that it represents a valuable source of information, one that should create appropriate incentives in this market. Similar results were obtained by Chiappori and Salanié (2000) and Dionne (2001).

One new and important aspect of insurance regulation under Solvency II is market transparency via disclosure requirements. The Solvency II rules require insurers to submit annually a report covering essential and concise information on their solvency and financial condition (European Commission 2007a, 10). Public disclosure constitutes the third pillar of the Solvency II framework. A transparent process with public disclosure requirements is expected to result in market participants forcing appropriate behavior. Market discipline is expected to encourage a strong and solvent insurance industry.

Today's evidence of market discipline in the EU insurance markets is still limited. For example, Eling and Schmit (2008) found some market discipline in the German insurance market, but their evidence is less clear than that for other insurance markets (see Epermanis and Harrington 2006 for an analysis of the US market) or other fields of the financial services industry (Sironi 2003; Distinguin et al. 2006). The new disclosure requirement under Solvency II could be a valuable data source for market participants, perhaps increasing market discipline. The new data might also be useful to analyze the success of the new solvency rules in the coming years.

Comparison of United States and European Union Insurance Regulation

The prior detailed discussion on insurance regulation in the US and the EU illustrates the various ways in which the two regimes are similar to and different from one another. Here we offer a brief outline of several general themes that emerge from that discussion. In doing so, we highlight both the differences between the US and EU as well as their relationship to economic principles of efficient regulation.

Insurance regulation has long been justified by its proponents based on what constitutes good public policy or serves the public interest. Because insurance aids economic development, the argument goes, its fair operation is crucial to society. Furthermore, a competitive market may be hampered by informational limitations. Within the domain of solvency regulation, many economists have argued that agency problems and costly information offer a general rationale for governmental intervention (Munch and Smallwood 1981). When a market is hampered by agency problems and costly information, it is believed subject to "risk-shifting moral hazard," whereby equity holders have incentives to extract value from debt holders through excessive risk taking. In the insurance context, equity holders have an incentive to take more risk than is optimal for policyholders. Although risk-taking behavior may be mitigated by the existence of franchise value (Staking and Babbel 1995), the problem is particularly acute in insurance because of the longterm nature of many insurance contracts, which allows management to increase risk after entering into contractual arrangements with its policyholders. The regulatory role in this situation is to "limit the degree of insolvency risk in accordance with society's preference for safety" (Klein 1995). Regulators have performed this role historically by imposing minimum capital and various other financial requirements.

Until the 1990s, solvency regulation in both the US and the EU set fixed minimum capital standards. With the introduction of "risk-based capital" (RBC) in the US, a move began toward using individual insurer characteristics to determine its capital requirement. While the US moved in this direction earlier than the EU, and had a shorter distance to travel, the EU appears to have caught up and surpassed the US with its recent focus on principles-based solvency regulation. RBC standards in the US remain somewhat static and focused on accounting data. In contrast, the EU is developing models that utilize dynamic financial analysis and add flexibility in incorporating individual insurer characteristics.

As presented above, most studies of the US RBC system indicate that it is a relatively poor predictor of solvency. While the US RBC formula is not intended to be a solvency predictor, its relatively subpar performance in empirical testing raises questions about its accuracy in determining capital requirements. These results suggest that using dynamic financial analysis (DFA) and qualitative methods could improve current solvency regulatory tools in the US substantially. In this sense, then, the likely results of Solvency II, which incorporate those tools, will be to improve regulators' ability to anticipate financial weaknesses and take action early. Solvency II also is expected to encourage insurers to manage their financial risk more prudently. What is less clear is whether or not the benefits of these new rules will outweigh the costs of additional complexity (Eling, Schmeiser, and Schmit 2007). This question arises when considering the rules that will determine whether insurers will be compelled to use an internal model versus a standard model that could apply to all insurers. The standard model could incorporate DFA.

Beyond capital requirements, the US imposes many additional financial requirements in numerous forms, including many rules governing insurers' financial structure and transactions, expectations for an array of financial ratios, extensive reporting of financial results, regular financial audits, and participation in guaranty associations. These requirements are costly and sometimes opaque. In both jurisdictions, we believe that market transparency through easily accessible information could be improved. In the US, rating agencies and the National Association of Insurance Commissioners (NAIC) offer extensive financial information regarding most insurers. Commercial policyholders are particularly aided by such information. Still, public information available on US insurers may not provide accurate indications of their financial risk. This same type of information has not been the standard throughout the EU, but it is being considered as part of the Solvency II requirements. Indeed, with the implementation of Solvency II, the quality of information available on European insurers could be superior to that available for US insurers. Given that the economic rationale for regulatory intervention rests on informational and agency problems, a focus on removing informational barriers and supporting market discipline would appear to serve solvency objectives.

In addition to solvency requirements, the US continues to impose a variety of strict pricing regulations in many state jurisdictions. The economic justification for price regulation is much more tenuous than that for solvency regulation. Competition precludes the need for regulation to prevent excessive prices. Further, effective solvency oversight and market discipline are better vehicles to address underpricing that would threaten an insurer's solvency. Hence, there is no credible economic basis for insurance price regulation.

Prior to 1994, most pricing regulation in the EU focused on assuring prices sufficiently high to protect against insolvency. Since 1994, most price regulation has been abandoned in the EU Today, regulation in the EU tends to allow competition to set prices. The initial change in philosophy was accompanied by numerous insolvencies in several jurisdictions, but it seems now to have settled into equilibrium (Cummins and Rubio-Misas 2006). A negative reaction such as this can

be a common initial scenario when price floors are eliminated. Markets tend to stabilize as insurers adjust to a competitive environment. Again, an effective risk-based financial regulatory system combined with market discipline is likely to discourage chronic underpricing as well as other high-risk behaviors.

Numerous additional regulations associated with policy forms, advertising restrictions, licensing, and so on can be found across the US Some are also found within the EU In both systems, variations across jurisdictions are being considered. The Optional Federal Chartering concept in the US is receiving considerable attention and support, along with detractors.³⁶ Within the EU, a desire to harmonize appears hampered primarily by larger issues, such as the more extensive question of contract law across borders. It may well be that within the EU, insurance regulations will harmonize more quickly than the general national contract laws.

Policy Implications and Future Research

What is the impetus for the striking difference between the static accounting system used in the US and the holistic management approach found under Solvency II? Answers to this question can be found in variations across the two markets and cultures, as well as in the timing of each system's introduction. Creators of Solvency II are able to take advantage of research that has generated a broad consensus among academics, practitioners, and policymakers that neither the European regulatory rules from the 1970s nor the current regulatory framework in the US is meeting regulatory objectives most effectively. They also have the advantage of advanced computer systems that allow for development and use of more complex models. We perceive, therefore, that much can be learned from the process being implemented under Solvency II.

The conceptual framework for and methods to accomplish risk management within financial institutions have evolved considerably in the past two decades. We see a movement toward enterprise risk management and the use of internal risk models with emphasis placed on dynamic financial analysis (DFA). An important facilitator of this development is the improvement in computing power that was not as readily available twenty years ago. Other facilitators are the increase in the speed of communication and the amount of data that can be transferred across business parties. Such technical progress is reflected in differences between the US and EU standards.

Yet, not only has technology seen massive changes in the last twenty years, but the competitive environment in the EU has undergone tremendous modification with extensive deregulation leading to increased competition (Eling and Parnitzke 2007). Improved market transparency and the entrance of foreign competitors led to intensive price competition, margin erosion, and cost pressure. There also were substantial changes in capital market conditions, such as the stock market crash from 2000 to 2003 and the historically low interest rates. Furthermore, the convergence in the financial services sector and developments in other fields of financial services, such as Basel II in banking, have influenced the new EU regulation.

The length of the process in the European Union, however, also provides a good example of how difficult it is to introduce a new, innovative system of regulation. The disadvantages of the old EU regulatory rules have been widely discussed and understood in academia and practice for many years (Farny 1997), yet thirty years passed between the old and new systems. Political decision making takes time, and in most cases a trigger is needed to push the development forward. In the EU this has been the formation of the common financial services market. The current financial market crisis that reveals the need for a regulatory reform might be such a trigger for the US

Despite the ease with which we compare developments in the EU and the US insurance regulatory systems, we also acknowledge the environmental differences that must be considered in evaluating regulatory success. The US and EU insurance markets operate in distinct economies and cultures, both of which affect regulatory approaches. Any true evaluation of the potential influence of different regulations requires focus on the respective market, limiting our ability to draw direct and clear conclusions about the two regulatory approaches.

Nevertheless, we encourage US regulators to keep in mind a variety of ideas that emerge from the Solvency II process when revising the US system. One of these is the notion of a principlesbased approach. While US regulators have indicated interest in exploring the broad application of a principles-based approach, there is no indication that they are poised to pursue a comprehensive set of reforms such as those being developed in the EU A drawback of standard rules-based models as found in the US is that these have only very limited flexibility to handle individual situations. Therefore the US model might not be very effective in assessing the wide range of insurance risk profiles (Eling et al. 2008). In comparison, the principles-based approach found under Solvency II is flexible and captures individual risk profiles, such as by using the insurer's parameters instead of those determined by the regulator. A principles-based approach could trigger innovation, as insurers are encouraged to develop and use their own risk models in order to determine the regulatory target capital. We anticipate competition among insurers to develop the best risk model in the market.

Another advantage in this context is that the principles-based approach allows the insurer to integrate regulatory requirements into its management process. Business and regulatory objectives then go hand in hand, which could lead to efficient regulation and risk management (Financial Services Authority 2007). Therefore Solvency II has the potential to improve management practices. Overall, Solvency II might create a superior atmosphere for innovation in EU insurance markets, which might also result in a competitive advantage for EU insurers compared to their US competitors.

These advantages, however, do not come without drawbacks. Relying upon principles could increase the complexity and costs of regulation both for the insurer, who needs time and money to implement the principles into a model, and for the regulator, who needs sufficient resources to evaluate all the individual models instead of one standard model. A major effort by regulators will be to assure that internal models are appropriate for the situation, and not methods to hide concerns specific to individual reasons. Such effort is costly in time and resources. For that reason we do not argue that there is a need for a centralized regulatory authority. Most academic experts believe that the efficiency of US regulation could be improved by creating a federal regulatory authority; however, the retention of a state-based system would not preclude more efficient and harmonized regulation. We should note that the idea of creating an EU-wide insurance authority with independent country (state) regulators has been discussed periodically and then abandoned. Of course, it is important to recognize that the US consists of states within one nation whereas the EU consists of sovereign countries within a unified framework. In either setting, what can be improved is the coordination between the different regulators; they therefore need to work on a mutual basis using the same principles, and they

need a fast and efficient connection to transfer information.

We therefore argue for a flexible scheme, one in which risk-based capital standards are used as guidelines to assist insurers in managing their risk structures rather than as absolute requirements (Eling et al. 2007). Flexibility is likely to yield a variety of risk strategies, limiting the possibility of systemic risk inherent in using a single standard model for all or even most insurers. Model arbitrage would be less effective, too, given that the requirements are flexible rather than rigid. US regulators might also consider forming something akin to the Committee of European Insurance and Occupational Pension Supervisors (CEI-OPS), which has been given the task to redesign the EU regulatory framework and is conducting public forums in which suggestions for future solvency rules are being collected and discussed. In the US, the closest analog to a structure that would have any kind of real authority would be an interstate compact. An interstate compact has been used to "harmonize" the regulation of US life insurance products, and such a vehicle could be used to advance and harmonize other aspects of US insurance regulation.

Throughout this paper, we have presented specifics of a variety of insurance regulatory controls in the US and the EU We further presented existing empirical evidence of the performance of some of those controls. Much additional research is warranted to assess the effects of recent and soon-to-be-implemented changes to those regulatory systems. Importantly, we encourage research on the effectiveness of various solvency models, the ability of market discipline to substitute for government intervention, and the ways in which insurance supervisors will be most effective in employing qualitative analyses of insurer practices. Implementation of Solvency II offers us a rich opportunity for a natural experiment on these open questions.

Notes

1. Klein (2005) provides a detailed description of US insurance regulation.

2. An insurance company must apply for a license in each jurisdiction in which it writes business. Only "surplus lines" or "non-admitted" insurers may sell insurance for certain designated lines or risks (determined by each state commissioner) without a license.

3. While large segments of the industry have been pushing for an OFC, it is strongly opposed by the states and other industry segments (for example, state and regional insurers, and local agents) that wield considerable political power. The US Department of the Treasury under the previous Bush administration supported an OFC and included it in its blueprint for revamping financial institutions' regulation (Treasury 2008). We expect that the Obama administration will issue its own plan for financial regulatory reform that will likely also address insurance regulation and may advocate an optional federal charter. This may add some impetus for an OFC, but it still faces strong opposition and it is uncertain where insurance will stand in the queue as the regulatory framework for all financial institutions is reconsidered and revamped.

4. Regulations governing insurers' investments provide a good example. Two NAIC model laws reflect different approaches, and the states have adopted one of these or developed their own specific rules.

5. The states' fixed minimum capital and surplus requirements range from \$500,000 to \$6 million, depending on the state and the lines that an insurer writes. The median fixed capital requirement is in the area of \$2 million (Klein 2005).

6. See Feldblum (1996) and NAIC (2007) for more detailed descriptions of the RBC formula.

7. An insurer's TAC is equal to its reported surplus with some minor modifications; for example, additional reserves required by regulators are added to an insurer's surplus in calculating its TAC.

8. The NAIC developed a model law to be adopted by the states that implements the RBC standards. All states have adopted the model law so the same rules have been established in each state.

9. In statistical language, this might be labeled as a "Type 1 Error." Conversely, a situation where the RBC formula would not require a financially weak insurer to increase its capital to an adequate level would constitute a "Type 2 Error." Klein and Wang (2007) demonstrate that only a small fraction of insurers fall below the company-

action-level RBC requirement and that rating agency capital-adequacy tests are considerably more stringent than US regulatory standards.

10. Based on the current formula, an insurer's RBC requirement increases proportionately with the amount of its premiums, assets, and loss reserves. However, arguably, according to the "law of large numbers," an insurer's risk does not increase proportionately with its size. With a size adjustment, a small insurer would have a higher relative RBC requirement than a large insurer, all other things equal.

11. For example, Feldblum (1996) suggests that better factors could be applied to the credit risk associated with reinsurance recoverables based on credit or claims-paying-ability ratings for reinsurers.

12. Regulatory activities in the US insurance system are not easily classified using the three-pillar framework. Many quantitative elements of US regulation are beyond capital standards that we discuss in this section. When it is discussed in an international context, the second pillar is more closely associated with qualitative aspects of the supervisory review, which includes an evaluation of an insurer's strategies, processes, and reporting procedures, the risks it is or may be exposed to, and its management of those risks. US regulators may consider some of these elements when evaluating an insurer's risk management, but their approach tends to be more quantitative and rules-based than the approach envisioned in Solvency II.

13. In the US, regulators require insurers to adhere to the NAIC's Statutory Accounting Principles (SAP), which differ somewhat from the US Generally Accepted Accounting Principles (GAAP). SAP accounting is intended to measure an insurer's liquidation value, while GAAP is intended to measure the value of a company as a going concern. Within the last decade, the NAIC has sought to standardize and document SAP through a series of more than a hundred issue papers that address various aspects of SAP rules.

14. These reports include insurers' RBC calculations, actuarial opinions of reserve adequacy, CPA-audited financial statements, and management opinions. Most but not all of these reports are available for public access.

15. State laws generally authorize regulators to review all books and records of a company at any time.

16. The terms "bench" or "desk" audit refer to an in-house review of an insurer's financial reports performed within the offices of the insurance regulator. This is contrasted with an on-site examination or audit of an insurer that is performed at the insurer's offices and involves a review of its books and records.

17. The NAIC's analysis activities are focused on larger insurers that write business in a significant number of states.

18. A list of FAST scoring system ratios is published in Klein (2005). However, the parameters used in developing an insurer's score remain confidential. The FAST scoring system is subject to more frequent modifications than the IRIS ratios.

19. NAIC analysis is confined to "nationally significant" companies, which are defined as companies writing business in seventeen or more states and having gross premiums (direct plus assumed) written in excess of \$50 million for life-health companies and \$30 million for property-casualty insurers.

20. Examiners have been encouraged to go beyond simply verifying the accuracy of an insurer's financial reports and perform additional analysis to assess an insurer's financial risk.

21. One exception to this is mandatory stress testing by life insurers to demonstrate the adequacy of their policy reserves.

22. Klein (1995) argues that this allows domiciliary states to impose negative externalities on non-domiciliary states. This problem motivates the multilayered monitoring and regulatory system described earlier.

23. The maximum limit for property-casualty claims is typically \$300,000, but some states have higher limits up to \$500,000. Many states have also enacted provisions that exclude guaranty-association coverage for claimants with a net worth exceeding a certain amount, for example, \$50 million.

24. Workers' compensation is an exception—all workers' compensation claims are covered by GAs, and there is no limit on the amount of coverage for each claim. This policy is intended to protect the claims of injured workers.

25. State rating laws and policies vary. In some states, regulators seek to constrain overall rate levels and rate structures (for example, differences in rates between low- and high-risk insureds). In other states, regulators tend to allow the market to set rates and do not seek to constrain the prices that insurers charge.

26. For example, regulators may prohibit the use of criteria such as the value of a home in underwriting homeowners insurance. Some states are also placing limitations on the use of credit scores in underwriting and pricing personallines insurance.

27. The states rely heavily on consumer complaints and market conduct examinations of insurers to police insurers' market practices.

28. Thirty-three states belong to the Interstate Insurance Product Regulation Commission for the review and approval of life insurance products according to a common set of standards. States may elect to opt out of a particular standard but agree to accept all products approved by the commission.

29. In current optional federal charter (OFC) proposals, federally chartered insurers would not be subject to price regulation. Other aspects of market regulation are not specified. However, there is no guarantee that federal regulators would ultimately refrain from some of the market regulation that insurers and economists criticize.

30. Hall (2000) estimated this cost to be \$1.22 for each \$1 of pre-insolvency assets using a shorter time period, 1986–1994. These costs are substantially higher than those for US bank insolvencies, with estimates ranging between \$0.20 and \$0.30 per \$1 of pre-insolvency assets (James 1991; Kaufmann 2001).

31. See also Downs and Sommer (1999) and Hall (2000).

32. Ruhil and Teske (2003) find some evidence that investing greater regulatory resources—for example, conducting more financial examinations—reduces the number of insolvencies.

33. In calibrating models to predict insolvencies, modelers have to balance the ratio of Type 1 errors to Type 2 errors. Models can be calibrated to predict more insolvencies (that is, reduce Type 1 errors), but this raises the number of Type 2 errors. Ultimately, a maximum acceptable level of Type 1 errors has to be established for any model that might be used for regulatory purposes. More accurate models should offer better Type 1/Type 2 error tradeoffs to choose from.

34. Cummins (2002) offers a number of state-specific studies. Harrington (2002) summarizes and updates previous research on the effect of auto insurance rate regulation. Studies of price regulation in workers' compensation insurance have produced similar findings (Barkume and Ruser 2001; Danzon and Harrington 2001; Thomason, Schmidle, and Burton 2001).

35. Grace, Klein, and Phillips (2002a) analyzed the turnaround in South Carolina.

36. Proposed OFC legislation would explicitly preclude price regulation. However, the legislation is essentially silent on other aspects of market regulation. Any legislation that is enacted could contain more provisions on other elements of market regulation and/or this could be left to the discretion of federal regulatory officials. Either way, the scope and nature of market regulation under an OFC is uncertain although its advocates are hoping for less restrictive policies.

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The Discriminating (Pricing) Actuary

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Abstract: The insurance industry is built on risk classification, grouping insureds into homogeneous classes. Through actions such as underwriting, pricing and so forth, it differentiates, or discriminates, among insureds. Actuaries have responsibility for pricing insurance risk transfers and are intimately involved in other aspects of company actions and so have a keen interest in whether or not discrimination is appropriate from both company and societal viewpoints. This paper reviews social and economic principles that can be used to assess the appropriateness of insurance discrimination. Discrimination issues vary by the line of insurance business and by the country and legal jurisdiction. This paper examines social and economic principles from the vantage of a specific line of business and jurisdiction; these vantage points provide insights into principles. To sharpen understanding of the social and economic principles, this paper also describes discrimination considerations for prohibitions based on diagnosis of COVID-19, the pandemic that swept the globe in 2020.

Insurance discrimination issues have been an important topic for the insurance industry for decades and are evolving in part due to insurers' extensive use of *Big Data*, that is, the increasing capacity and computational abilities of computers, availability of new and innovative sources of data, and advanced algorithms that can detect patterns in insurance activities that were previously unknown. On the one hand, the fundamental issues of insurance discrimination have not changed with Big Data; one can think of credit-based insurance scoring and price optimization as simply forerunners of this movement. On the other hand, issues regarding privacy and use of algorithmic proxies take on increased importance as insurers' extensive use of data and computational abilities evolve.

Keywords: Actuarial fairness; disparate impact; proxy discrimination; unisex classification; credit-based insurance scores; price optimization; genetic testing; big data; COVID-19

1 Introduction

Discrimination is a topic that touches on the daily lives of almost every person. The word "discrimination" generally has negative connotations; people think of discrimination as occurring when we go into a store and are treated differently because of our hair color, when we apply for a job that we are well qualified except for our age, when we are shunned from a social group because of our ethnicity, heritage, or religious background. From this perspective, discrimination is endemic in our society and a topic that well deserves serious consideration. This article focuses on discrimination in an insurance context. Insurance is particularly interesting because the entire industry is based on discrimination. Here, we use the word "discrimination" in an entirely neutral way, taking it to mean the act of treating different groups differently – where the groups are distinguished by salient features such as hair color, age, gender, heritage, religion, and so forth – whether such discrimination is justifiable or not. For example, auto insurers often charge younger (presumably riskier) drivers more than older (presumably safer) drivers, but do not make a distinction between brown-haired and red-haired drivers (presumably because the two groups are equally risky). So, discrimination based on age is done routinely, whereas discrimination based on hair color is not. In subsequent sections, we present different arguments about whether insurance discrimination is ethical or is "unfair" and morally indefensible in some sense.

1.1 How Insurers Discriminate

Insurers collect information on current and potential customers. They collect information about the customers themselves, the entity being insured (whether a person, organization, or physical object such an auto or home), where the entity is located (that can vary, such as a person or auto), and parameters about the contract desired, among other things. This information, represented as variables or factors, provide the basis that insurers use to form groups and make decisions. And by treating groups differently, they *discriminate* among them. Before describing the process of forming these groups and weighing in on whether or not the use of a specific variable is ethical, we first describe the set of actions that an insurer might take. In short, how do insurers discriminate among customers?

Issuance, renewal, or cancellation. The first stage is the decision to insure. We follow the structure of Avraham (2018) who notes that the harshest form of discrimination is the decision on whether or not to issue a policy because of some characteristic, such as the applicant's religion or ethnicity. This may be at the underwriting stage or even earlier, at the marketing stage. For example, Section 2.3 describes classical issues of so-called *redlining* where insurers simply did not enter geographic districts with high concentrations of African-Americans (who were assumed to be high risks). A similar type of discrimination happens when insurers refuse to renew or when they cancel policies based on some characteristic. Indeed, some jurisdictions have statutes that limit or prohibit the use of a particular characteristic in either issuance, renewal, or cancellation of an insurance contract.

Coverage. Another form of discrimination involves restricting coverage in ways that might harm disadvantaged groups. For example, insurance companies might limit disability insurance coverage for people with disabilities that stem from having a human immunodeficiency virus (HIV). **Pricing.** Even without limitations on issuance and coverage, insurance companies can still distinguish among insureds by simply charging different premiums. For example, an insurer may admit people with various diseases and disabilities into their pool, yet charge these people a higher premium. Is this fair or unfair? Some argue that a specific disease, e.g., cancer, is no fault of the individual and so they should not bear the additional burden of higher premiums. A counter position is that, by admitting high-cost individuals to the pool, this raises the costs for all in the insurer's pool (even those without the specific disease).

1.2 Insurance Prohibitions

The modern-day insurance industry is founded on the ability to differentiate, or discriminate, among risks, known as *risk classification*. Thinking of an insurer as a private company, there are strong economic arguments for permitting insurers to discriminate among risks; Section 3 presents economic reasoning for this permission. There is evidence, consistent across lines of business and international jurisdictions, that insurance policyholders believe that some insurance discrimination is fair, c.f., Schmeiser, Störmer, and Wagner (2014). However, there are also instances where consumers are concerned with "unfair" discrimination. When insurance is mandatory or nearly so, it becomes less of an economic commodity and more of a social good, resulting in different attitudes towards "fairness." Section 2 describes social justice considerations that underpin notions of fairness. Because of these concerns, regulators and policymakers in many jurisdictions impose restrictions on insurers abilities to discriminate.

Disagreements among stakeholders about what constitutes fairness can arise depending on whether one views insurance as an economic commodity or as a social good. Employees of insurers often think of insurance as an economic quantity and argue that risk classification is morally appropriate, c.f., concepts of *actuarial fairness* in Section 2. Consumer advocates focus on concepts of solidarity and cross-subsidization of risks, thinking of insurance as a social good, or a basic human right. These views depend markedly upon the jurisdiction and line of insurance business, as discussed in Sections 4.2 and 5, respectively.

Insurance discrimination, including the prohibitions from regulators that insurers might face and how these prohibitions affect society, has long been an important topic. Issues of fairness have not been resolved nor are they becoming less relevant; its prominence has lately increased with the increasing importance of "Big Data" where massive data sets and increasing computing power has become commonplace, c.f., Thouvenin et al. (2019). Like other major industries, insurers have at their disposal increasing amounts of information available about current and potential customers. As emphasized in Sections 5.5 and 6.4, more information gives insurers opportunities to differentiate among potential clients at
increasingly granular levels; many are doing so because of real or perceived pressures from competition. However, not all information that could be used should be used - we seek to provide a framework for actuaries and other analysts to think about the use of potentially sensitive information.

2 Social Justice Considerations

2.1 What is Actuarial Fairness?

To understand what is unfair discrimination and what insurers should be prohibited from doing, let us start with a discussion of "fair" insurance mechanisms. We begin with a historical context, drawing on the work of Frezal and Barry (2019).

2.1.1 Pooling and Solidarity

In the early seventeenth century, mathematicians used games of chance such as rolling dice and drawing lotteries to develop a theory of randomness. For example, the fair price for each participant in a lottery was determined by the sum of wagers divided by the number of participants. Fairness was thus understood within the framework of individual equitable contracts, ones that traded a certain present amount for an uncertain future value. Even though the ex-post results of the game had winners and losers, because the ex-ante probabilities were equal, such games could be accepted as fair.

Much later, in the nineteenth century, a similar mathematical model was used for insurance pricing. From an individual's perspective, one could again trade a certain present amount, the premium, for an uncertain future value that would provide compensation for an insured loss. For an insurance pool, the sum of future values was no longer certain (unlike the lottery size) but, with the additional regularity in the sum of future value of losses, there were real benefits in pooling of risks. In the modern language of probability, although the amount that an individual might expect to lose for an insured loss remained unchanged, the amount of uncertainty was vastly reduced.

Insurance pooling offered a novel method for coping with the uncertainty of losses. Before this, the only method of coping with potential loss events was individual prudence. With an insurance pool, losses now became the responsibility of the pool. From a moral perspective, the responsibility for the accident could now be thought of as not due to the behavior of the faulty individual but rather attributed to the collective; in this sense, pooling *socializes responsibility*, c.f., Baker (2002).

As further discussed in Lehtonen and Liukko (2011), pooling creates a sense of shared responsibility among a group of people. This, combined with a certain understanding of

equality and justice, creates a type of *insurance solidarity*. It is not the same type of solidarity that one thinks of in political movements which embody a conscious identification with the group, emotional bonds, shared values and beliefs, and so forth. It is solidarity that emphasizes mutual responsibility, reciprocity, and a particular shared understanding of fairness. Insurance provides a mechanism to transfer an individual's uncertainty to a pool; to achieve this agreement, the individual must have faith in the pool.

2.1.2 Responsibility and Actuarial Fairness

With the shift of responsibility from the individual to the pool, one can imagine that the sense of fairness shifts and depends upon the nature of the pool. If the pool is formed from a small group of like-minded individuals (think of the classical case of a group of farmers forming a collective to restore a member's barn in the event of fire), then there will be little difference between notions of fairness for the individual and for the pool collective. However, modern day insurance is generally sponsored at large levels, either by governments or private corporations, the latter of which can be owned by policyholders (mutual or takaful companies) or by investors (stock companies). Members of the pool may feel a type of (insurance) solidarity but the responsibilities of the pool depend on its nature.

Stock Insurance Company. At one end of the spectrum is the case of the pool of contracts issued to individuals by a for-profit stock company. Here, the pool can be thought of as a sum of bilateral contracts that leaves out the collective dimension of insurance. Actuarially fair pricing is based on the expected value of the uncertain event at stake, taken to be the risk transferred from the insured to the insurer. In this context, fairness means that each customer should pay for their own risk and only their own risk. As will be discussed in Section 3, there is ample basis for this position from economic theory.

Government. At the other end of the spectrum is the case when the pool is owned by a government entity where such contracts constitute *social insurance*. Subsidies, from one group to another, are common in social insurance. Governments regularly engage in social policy such as the redistribution of risk or income. The use of insurance to subsidize the underprivileged is consistent with what many view as a government's core mission. In social insurance, there can be a large variation in how strictly the principle of actuarial fairness is followed.

Group Insurance. Between these two ends of the spectrum, there is substantial variation in principles of fairness depending on who owns the pool and the nature of the contractual arrangement. For example, consider a disability income contract issued to a large group, such as a university. Because the employer (university) pays all or a major portion, premiums rated by risk factors are not a major issue (unlike the individual market). In general, in group insurance, the amount of socialization is greater than one would find in the corresponding individual market.

As described in Baker (2002), most people do not think that their premiums will go to pay other people's claims. Instead, they think of it as a type of savings account and often expect that over the course of a lifetime the deposits made by each person should roughly equal the withdrawals on that person's insurance account. Thinking of premiums as going to pay others claims emphasizes the social aspect of insurance. That is, the losses, understood as belonging to the collective, are also borne collectively (Lehtonen and Liukko (2011), p. 35).

Mutual Company. In a mutual insurance company, the policyholders are both customers and owners. Unlike stock companies, ownership rights of the mutual policyholders are not transferable. By eliminating stockholders with their separate and sometimes conflicting interests, potential conflicts between owners and customers over dividend, financing, and investment policies are internalized. This is the major benefit of the mutual form of organization. As the owners of the pool are the policyholder themselves, this suggests that the amounts of cross-subsidies among groups or socialization would be greater than in an organization with a for-profit motive. However, in point of practice, mutuals compete with stock companies and so many of their practices are indistinguishable from stock companies. A small academic literature examines differences between stocks and mutuals, c.f., Braun, Schmeiser, and Rymaszewski (2015). In part due to the policyholder's owner stake in the company, evidence from this literature suggests that policies offered by stock insurers are overpriced relative to policies of mutuals. Nonetheless, we know of no study that has confirmed nor disproved the conjecture that mutuals discriminate differently than stock insurers.

Takaful. As another example, consider modern takaful companies, c.f., Maysami and Kwon (1999). In many senses there are similarities between takaful and mutual companies. Classical Western insurance appears to violate the Islamic prohibition of gambling (as well as the Islamic prohibition of usury). Instead takaful insurance offers, not as a bilateral contract, a transfer of a known risk to a collective enterprise by which Muslims pool resources to aid one other in the event of loss. Responsibility of the loss shifts from the individual to the collective and so aspects of fairness shift.

2.1.3 Insurance as a Social Good

Attitudes towards fairness also depend upon whether an insurance product can be viewed as a social or type of public good. A social good is something that benefits the general public such as clean air, clean water, and literacy. One characteristic of a public good is that is *non-excludable*, that is, it cannot be provided unless others can also enjoy it. For example, if you erect a dam to stop flooding - you protect everyone in the area (whether or not they contributed to erecting the dam). Thus, viewing an insurance product as public good would argue against excluding members of society.

For example, in many countries health insurance is likely to be seen as a social good where access to a certain level of healthcare is guaranteed for all. This is even true in a country like the U.S. which generally has taken longer to improve access to healthcare than other countries. In contrast, life insurance is more often seen as a private (non-public) economic commodity. Life insurance can enhance the financial security of the family of a policyholder but is voluntary and is not viewed as a necessity. Other insurance lines, such as long-term care and disability insurance arguably fall somewhere in the spectrum between social and economic private goods, c.f., Prince (2019).

If an insurance product is thought to be a social good, a related question is whether members of the public have equal access to the product. Specifically, the issue is whether there is an impact which puts members of a select "protected" group at a disproportionate disadvantage compared with members of a similar group. Issues of such *disparate impact* are difficult for individual insurers to address but are important for public acceptance of the insurance marketplace, c.f., Miller (2009). Regulators have been grappling with the question of whether laws, which prohibit discrimination based on race, religion, or national origin, could or should cover instances of disparate impact on underserved or protected classes of consumers emanating from the use of predictive modeling and analytics.

2.2 Characteristics of Sensitive Variables

Grouping, or classifying, insureds into homogeneous categories for the purposes of risk sharing is at the heart of the insurance function. Many variables that insurers use are seemingly innocuous (e.g., blindness for auto insurance) yet others can be viewed as "wrong" (e.g., religious affiliation), "unfair" (e.g., onset of cancer for health insurance), "sensitive" (e.g., marital status), or "mysterious" (e.g., AI produced). When regulators and policymakers decide that it is not permitted to use a variable for classification, it is thought of as creating a **protected** class. By and large, the choice of whether a variable should be used for insurance purposes is a normative one. Although actuaries and other financial analysts determine insurance premiums from the available information, the choice of which variables to use is a societal one in which many actors participate.

Nonetheless, it is helpful to understand what variable attributes influence society's assessment of whether it is fair for insurance purposes. When identifying whether or not a variable contains sensitive information, we use a structure drawn from Avraham (2018) and Prince and Schwarcz (2020).

- **Control.** If an insured has control over an attribute, it is generally deemed to be an acceptable variable to be used for insurance purposes. For an example from auto insurance, consider a variable that indicates whether the car is high performance, capable of going at fast speeds and expensive to replace in the event of an accident. An insured chooses whether or not to purchase a high performance vehicle and so vehicle type is generally deemed to be an acceptable variable. In contrast, race and sex at birth are examples of characteristics over which insureds have no control. Naturally, questions of degree of choice enter; for example, smoking in life insurance is generally now accepted as a rating factor whereas religious affiliation is generally prohibited.
- Mutability. Does the variable change over time (such as age) or stay fixed? It is possible that rating by age is tolerable because we all get the same chance to be on the winning side and the losing side of it over the course of a lifetime.
- Statistical Discrimination. A variable should have some predictive value of an underlying risk. If it does not, then it is generally viewed as unacceptable for insurance purposes. As a rule of thumb, the better predictor of risk the characteristic is, the more tolerable such discrimination becomes. However, some pricing variables may not have such predictive abilities; Section 3.3 will sharpen this precept by distinguishing between "risk-based" and "non-risk" price discrimination in insurance.
- Causality. It is generally acceptable to use a variable if it is known to cause an insured event. For example, an individual diagnosed with cancer will generally be unable to purchase life insurance. Naturally, establishing causality is a much higher bar than mere correlation, or predictive ability, for a risk. For example, decades were spent building scientific evidence before it was widely established that smoking causes premature deaths, c.f., Peto (1994).
- Limiting or Reversing the Effects of Past Prejudice. Does an insurer's use of a trait perpetuate negative stereotypes or otherwise subordinate disadvantaged groups? The historical use of the characteristic as a method of discrimination is also relevant; that is, whether the characteristic defines a socially salient group that has been disadvantaged in the past. In that sense, discriminating based on skin color is more problematic than based on eye color.
- Inhibiting Socially Valuable Behavior. Does an insurer's use of a trait inhibit or prevent socially desirable activities? Section 5.1 describes how individuals, fearful of being denied life insurance, avoid participating in genetic testing research. As another example, Prince and Schwarcz (2020) cite U.S. laws that prohibit insurers from

discriminating on the basis of intimate partner violence because such reporting could dissuade victims of violence from seeking needed medical care or police intervention.

Whether a characteristic is socially suspect or sensitive is context-dependent, depending on the jurisdiction and the line of insurance business, as described in Sections 4.2 and 5.

2.3 Indirect Discrimination

One of the difficult questions in insurance discrimination is the treatment of related variables; use of variables related to a prohibited variable constitutes *indirect discrimination*. These are variables that, although they do not have the usual characteristics of an unfair variable (Section 2.2), have undesirable effects on society. A classic example is *redlining*, a term that refers to the practice of drawing red lines on a map to indicate areas that insurers will not serve, areas typically containing high proportions of minorities.

Specifically, we can define indirect (insurance) discrimination as consisting of three elements: *proxy discrimination*, disparate impact, and whether or not the discrimination could be avoided by other means. We address each in turn.

Proxy discrimination, also known as *indirect statistical discrimination*, occurs when insurers discriminate based on a facially-neutral characteristic, such as the size of the car engine, that correlates with a protected class, such as gender (in many studies, men like to drive cars with big engines). In the case of redlining, insurers discriminate based on geographic area (such as an urban area) that is correlated with race. Specifically, by avoiding certain urban areas, they also avoid large groups of potential minority customers; this amounts to at least partially making insurance decisions based on a protected variable.

It will be helpful to think about two types of proxies: one where an identifiable surrogate such as geographic area serves as a substitute for a protected variable such as race, and one where the proxy is produced by an algorithm that summarizes the effects of many variables. Section 5.5 on big data emphasizes the increasing importance of the second type of proxy discrimination as insurers utilize increasingly sophisticated algorithms and growing sources of data. Empirical aspects of proxy discrimination are discussed further in Section 6.

The second element is disparate impact, i.e., whether there is an impact which puts members of a protected group at a disproportionate disadvantage compared with members of a similar group. Returning to the redlining example, this practice puts minority neighborhoods at an economic disadvantage. Baker (2002) states: "A neighborhood redlined by insurance companies is a more risky place for banks to lend. Without good financing opportunities, fewer people invest in the neighborhood, and without investment the neighborhood becomes an even more risky place for banks, causing further decline." These notions of proxy discrimination and disparate impact are drawn from the legal literature where it can be sometimes difficult to infer a precise mathematical formulation. For our purposes, we think of proxy association as the relationship between a protected variable and a set of one or more surrogate variables whereas disparate impact occurs when there is a relationship between a protected variable and an outcome of interest (e.g., insurance purchase). In Section 6.4, we supplement these definitions by drawing from the machine learning literature.

The third element is whether the criterion is motivated by a *legitimate business necessity*. If it is, then discrimination may be legal even in the event of producing a disparate impact. For example, Section 5.3 will describe models that optimize insurer's profitably objectives, a legitimate business motivation, at the expense of disfavoring customers with fewer market options who tend to be low-income and minority consumers.

As another example, the Council of the EU adopted Directive 2004/113/EC Guidelines on the Application of the Gender Directive, "the use of risk factors which might be correlated with gender [...], as long as they are true risk factors in their own right" is still permitted.

3 Economic Considerations

One approach to pricing is to think of an insurance contract as a type of financial investment. From this viewpoint, financial investors base risk transfers considerations on a *law of one price* that is dictated by forces of supply and demand in a competitive market. An advantage of this approach is that many issues of insurance discrimination become moot as prices are given by an external marketplace. Many readers will enjoy thinking about pricing of insurance contracts in the context of financial economics asset pricing theory, summarized by Bauer, Phillips, and Zanjani (2013).

However, even in personal lines (where there is much more homogeneity than in commercial lines), there is substantial heterogeneity among insurance products when considering the variety of contract features (deductibles, limits, coinsurance, and so forth), risk factors of the entity insured (e.g., auto or home), and risk factors of the insured (e.g., attitude toward risk) that exist. Because of this heterogeneity, insurance pricing is focused on the underlying *cost of producing the good or service*.

Like any firm, the price that an insurer charges is determined by the quantity where marginal cost equals marginal revenue. However, unlike other industries, determining marginal costs is difficult in insurance. In part this is because the production cost is random. By definition, insurance contracts are based on contingent events whose financial outcomes are uncertain. Further, even when an insured event does occur, the actual cost of an insured claim may not be known for a long period of time.

As further developed in Section 4.1, insurance prices are based on the expectation of losses, a concept coined as an *actuarially fair* price in Arrow (1963). In a simple model, an actuarially fair price is the result of an assumption of zero profits and ensures that the insured will buy full insurance coverage. It is the foundation of insurance pricing.

3.1 Adverse Selection, Moral Hazard, and Incentives

Simple models can provide insights but are naturally limited in addressing the numerous features of real contracts. One feature particularly relevant to potential insurance discrimination is unequal access to information, known as *information asymmetry*.

Insurers traditionally face *adverse selection*, a problem that can arise when consumers know more about their own risk characteristics than insurers. Insurers argue that by knowing about risk factors, the entire marketplace is better. Indeed, the entire purpose of risk classification is to mitigate the problem of adverse selection. Extending this line of thought, the more information that insurers have about policyholders, the more effective is risk classification; this in turn results in a better marketplace for all.

Another type of adverse selection can occur when an insurer has less information than other competing insurance companies about the risk levels of its customers, c.f., Cather (2018). This can result in *cream skimming*, since the innovative insurer targets the best risks who, like cream in a container of fresh milk, rise to the top of a pool of policyholders.

Another classic type of information asymmetry is *moral hazard*. Insurers worry about insureds' attitude toward safety; by purchasing insurance, insureds have the incentive to take on more risks (thus, increasing the probability of a risky event). For example, after purchasing of homeowners insurance, the insured may become lax in watching for fires (smoking in bed, not checking for frayed electrical wires). One way to mitigate this risk is through the installation of fire alarms.

Insurers also have to be wary of their own moral hazard. For example, if they acquire a protected variable such as political affiliation, then they have to be careful that this knowledge does not implicitly bias their pricing processes even if they do not use this information actively. One way to mitigate this risk is to simply avoid acquiring such protected information.

An implication of moral hazard is that people tend to increase their risk unless given incentives not to. Conversely, people may also *reduce* their risks when given incentives to do so. Indeed, much of modern risk management is predicated on introducing risk mitigation tools to reduce the impact of insured events. Classic examples include lower premiums for sprinkling systems in fire insurance and no smoker discounts in life insurance (Avraham, Logue, and Schwarcz (2014)).

Insurers worry about traditional adverse selection and moral hazard because information asymmetries favor policyholders over insurers. In contrast, as emphasized by Schwarcz and Siegelman (2017), much of insurance law is designed to protect policyholders because of information asymmetries that favor insurers over policyholders. For example, policyholders are often insufficiently knowledgeable about an insurance policy terms and conditions, the insurers' financial strength, and the appropriate type of policy for a consumer's needs. Regulators are concerned that insurers may be able to exploit these deficits in policyholder information or sophistication by providing more limited coverage than policyholders believe they are purchasing, or by adopting excessively aggressive claims-handling strategies.

More recently, consumer advocates have been concerned that additional big data information, discussed more in Section 5.5, puts consumers at a disadvantage. For consumer advocates, more data information for insurers means that:

- Insurers can cherry pick at a granular level.
- Insureds do not have equivalent new tools to compare quality of policies and performance of insurance companies.

Consumer advocates argue that mandatory and de facto mandatory purchase of insurance means that free market competition is insufficient to protect policyholders.

3.2 Economic Efficiencies

Economists largely agree that a competitive market is an efficient one, c.f., Skipper and Klein (2000). Efficiency is achieved because competition forces buyers to pay their maximum demand price and forces sellers to charge their minimum supply price. Competition serves the best interests of consumers in that it provides insurers incentives to attract customers by reducing prices or improving insurance products. Competition policy is about applying rules to make sure companies compete fairly with each other.

One of the barriers to competition is asymmetric information; the insurance industry uses risk classification to cope with this potential problem. What could happen without risk classification? Because of the price differential we might see a reduced pool of insured individuals; this reflects a decrease in the efficiency of the insurance market. Extending this line of thought to multiple periods suggests an exodus of low risks that can lead to a *death spiral* of rising premiums and ends up unraveling the entire market, c.f., Dionne and Rothschild (2014).

However, by and large, insurers are allowed to classify risks. As argued by Tennyson (2007), a large body of academic research supports the conclusion that insurance markets

function in a *workably competitive* manner in the absence of rate regulation. Competition indicators include the number of insurers and their market shares, profitability, and price of their products. At least some markets for some countries (e.g., U.K. auto) generally exhibit the characteristics of a competitive market, FCA (2019) (Annex 3: International Comparisons).

Rate regulation can limit the insurers ability to classify risks and hence threaten competition. Tennyson (2007) describes two types of rate regulation regimes:

- rate suppression reducing average rates for all consumers, and
- *rate compression* reducing rates for some consumers (usually high-risks) relative to others (usually low-risks).

Both have negative consequences for insurance markets. Rate suppression runs the risk of driving average premiums below competitive levels, reducing insurer returns below a competitive rate of return. Rate suppression will distort insurance supply in the market, reducing competition in the long run. Rate compression can have similar effects by reducing rates for some consumer groups below competitive levels. As an example of evidence of the negative effects of rate regulation, in a classic article Blackmon and Zeckhauser (1991) document the negative effects of rate suppression and compression for the automobile market in Massachusetts.

3.3 Price Discrimination

The act of charging different prices for identical products is known in economics as *price* discrimination. To apply this to insurance, we need to specify that identical products also means identical production costs. We could, for example, have two auto policies that promise to pay exactly the same benefits for a loss. But, their prices may differ depending on risk factors such as the insured's ability to drive and attitude towards risk, the type of vehicle itself (inexpensive family car versus a pricey sports car), the location where it is being driven (city versus rural), and so forth. So, the expected loss would be different causing the prices to differ. This type of risk-based price discrimination is the norm in insurance pricing. In contrast, Thomas (2012) uses the phrase non-risk price discrimination for the insurance situation where prices may differ for the same coverage and underlying risk characteristics.

Price discrimination is common in other industries. For example, airlines regularly charge higher prices for flights during the week (e.g., Monday to Friday) because these are typically taken by business travelers. This is an example of *first-degree price discrimination* where the price is based on the buyer's willingness to pay. Second-degree discrimination involves quantity discounts, whereas third-degree discrimination reflects different prices for different consumer groups, e.g., discounts for senior citizens (known as "honored citizens" in Portland). Price discrimination is not possible in a perfectly competitive market because there are many firms competing for the price, c.f., Lukacs, Neubecker, and Rowan (2016).

In the insurance industry, first-degree price discrimination is common in large commercial insurance where it is assumed that buyers are sophisticated and willing and able to negotiate prices. Third-degree price discrimination is common in personal insurance, at least in some jurisdictions such as within Europe and the United Kingdom. In particular, prices for renewing customers are often distinguished from risk-identical new customers, with different (usually lower) price offers made to new customers; "paying customers to switch." To illustrate, the work in Adams et al. (2015) on general insurance auto confirms that some consumers pay much higher prices if they stay with the same insurer, particularly for a long period of time. This practice is motivated by so-called *price optimization* models that are described in Section 5.3.

For personal insurance, some jurisdictions allow price discrimination but others take a dim view of it. For example, in the early to mid-1800's U.S. voluntary associations of insurers were organized in part to enforce uniform rates among the insurers. Uniform rates were desired so that rates were adequate to protect against insolvencies and were not unfairly discriminatory. From Miller (2009),

The primary concern with unfairly discriminatory rates, often stated at the time, was that rich and powerful insureds could unfairly negotiate lower rates than were being charged to less influential insureds, even though their degree of risk and underlying insurance costs did not warrant a lower rate.

Is price discrimination appropriate for insurance? Thomas (2012) summarizes five aspects of insurance that makes it different from other marketplaces.

- (1) Ability to discriminate. Insurers can differentiate prices because of the quality of their data, the general confusion surrounding the pricing process, and the consumer's inability to "re-sell" the product.
- (2) Price discrimination in insurance does not facilitate new markets.
- (3) Price discrimination may undermine utmost good faith. Laws mandate that customers provide information about their risks truthfully and, in many jurisdictions, insurers are also permitted to share information for the purposes of preventing fraud. If this information is used for other purposes, then over time this could undermine public acceptance of the doctrine of utmost good faith.
- (4) Price discrimination may undermine justifications for risk-related pricing.

(5) **Distributional effects of price discrimination.** Allowing price discrimination may introduce cross-subsidies and have uneven effects on different parts of society.

Insurers may wish to use non-risk related factors to achieve legitimate business goals, such as maximizing profit or increasing customer retention. In these cases, firms may unwittingly discriminate, knowing only that a facially-neutral practice produces desirable outcomes. Section 5.3 describes the specific case of price optimization models where use of non-risk related factors is prohibited in many jurisdictions.

4 Actuarial Aspects of Rate Regulation

Section 1.1 provides an overview as to ways in which insurers discriminate; the focus of this section is on the pricing function. This is because actuaries are heavily involved, and hence influential, in pricing. Further, many regulations are geared towards pricing prohibitions, known as *rate regulation*. In addition, one can argue that prices are intimately related to whether or not someone is offered coverage (one could "price someone out of the market") and the amount of coverage.

4.1 Pricing

Like any business, pricing is critical in insurance. As described in Section 3, one aspect in which insurance differs from other industries is that the cost of the good is random and may not be known for many years after the sale of the product. This has led the actuarial profession to think deeply about what this "cost" entails.

Nonetheless, prices are often based on the **cost of insurance**. These are the costs of transferring a risk from the policyholder to the insurer. As described in standard actuarial textbooks such as Friedland (2013) and Werner and Modlin (2016) (see also Chapter 7 of the open source Loss Data Analytics), insurance costs consist of the (1) losses (compensation provided by the insurer for the insured claim), (2) expenses associated with the policy and claim, and (3) cost of capital (costs of keeping monies necessary to fund the insurance operation). Prices based on insurance costs are sometimes known as *technical prices*.

As described in the online supplement Frees and Huang (2021), many jurisdictions are silent on insurance rate regulations and so market prices are influenced by forces of supply and demand. As with other businesses, the cost of a product is an important but may not be the sole determinant of a price. Additional factors include the market availability of alternatives (e.g., costs of self-insurance, prices offered by competing firms) and marketing considerations such as customer loyalty. However, in jurisdictions where rate regulation is prominent, prohibitions are in terms of technical prices. Because our focus is on rate regulations, we focus on cost-based technical prices.

Also from Frees and Huang (2021), many jurisdictions exhibit insurance rate regulations in one form or another. At the time of this writing, the U.S. is the country that most actively regulates rates and so we use this to motivate the discussion. From the U.S.-domiciled Casualty Actuarial Society's Statement of Principles Regarding Property and Casualty Insurance Ratemaking (Principle 4), "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."

In the U.S., insurance is regulated at the state level. The National Association of Insurance Commissioners (NAIC) is an organization that provides standards that states may adopt. As described in the model rating law NAIC (2010), the rule is that ... Rates shall not be excessive, inadequate or unfairly discriminatory. It further defines an unfair discriminatory rate as ... Unfair discrimination exists if, after allowing for practical limitations, price differentials fail to reflect equitably the differences in expected losses and expenses.

As an expectation, cost-based prices are naturally influenced by the choice of rating factors and this is where regulation comes into play. Regulators prohibit the use of certain variables - how do these prohibitions affect rating schemes?

4.2 Extent of Regulation

Insurance regulations may consist of applicable acts, statutes, regulations or any other binding authority (such as accounting standards and any regulatory guidance that is effectively binding), as described within the International Standards of Actuarial Practice (ISAPs) of the International Actuarial Association. In most jurisdictions, their enforcement is overseen by an insurance supervisor or regulator, many of whom follow the standards developed by the International Association of Insurance Supervisors (IAIS). According to their website, the IAIS "is the international standard-setting body responsible for developing and assisting in the implementation of principles, standards and other supporting material for the supervision of the insurance sector." These include standards known as insurance core principles (ICPs): on insurer solvency, sales practices, agent licensing and policy forms, for example. Interestingly, there is no discussion within the ICPs on rate regulation.

The extent of insurance rate regulation varies by jurisdiction. At one end of the spectrum, the phrase *active rate regulation* means that the regulator is heavily involved in determining rates. This could mean government mandated rates in which regulators dictate the rates to be charged. Alternatively, regulators may only require approval of rates, either in advance or concurrent with policy offerings. Friedland (2013) (Chapter 27) summarizes the spectrum

of rate regulation. To illustrate, for the U.S., Borselli (2011) provides additional details including types of regulatory system organized by state and line of business. The other end of spectrum is competitive rating or open competition systems. Borselli (2011) compares active rate regulation to open compensation systems. He notes that historically many European countries operated under active rate regulatory environments but now regulators of European members states do not have the right to regulate insurance prices

For more concrete descriptions, in a supporting document Frees and Huang (2021) we describe several major regulatory jurisdictions:

- The U.S. is the largest general insurance marketplace. It is also the most actively regulated jurisdiction with a coordinating body (the National Association of Insurance Commissioners) that develops model laws that *may* be adopted by individual states.
- The European Union is the second largest marketplace. It has a coordinating body (the European Commission) that develops legislative directives that *must* be implemented by member countries.
- China, Japan, and Australia, are the third, fourth and tenth, respectively, largest marketplaces. They illustrate the variety that even single country regulatory environments may exhibit regarding discrimination issues in insurance.

5 Prohibitions by Line of Business

In addition to jurisdiction, as emphasized by Avraham (2018), insurance prohibitions vary greatly by line of business. It is notable that the markets in which rate regulation is most common - automobile insurance, health insurance, workers compensation, medical malpractice, and homeowners' insurance – are all markets in which insurance is mandatory or in which universal coverage is thought to be socially desirable, c.f., Tennyson (2007).

In commercial lines of insurance such as general liability and professional liability, the policyholder is a firm. As a general rule, insurance rate regulation tends to be absent from commercial insurance. In part this is because firms typically have more resources than individuals and so do not suffer the same imbalance of information asymmetry as described in Section 3.1. As exceptions to this rule, medical malpractice and workers' compensation continue to be highly regulated. These two lines provide coverages that tend to be mandated by government regulations. Even though highly regulated, because the purchasers of insurance are generally organizations, discrimination issues are not as relevant. In the following, we focus instead on personal insurance.

5.1 Unisex Risk Classification

The European insurance marketplace was rocked in 2011 when the European Court of Justice concluded that any gender-based insurance discrimination is prohibited, European Union (2012). Prior to this ruling, gender was regularly routinely used for pricing insurance.

Broadly, what characteristics of this trait would lead society to prohibit its use for insurance discrimination? Referring to the Section 2.2 categories, sex at birth is certainly beyond the control of the insured. Insurers have economic motivation for using gender as a predictor because, for many lines of business, it exhibits helpful predictive abilities even though its causal nature can be debated. An important motivation for prohibiting gender as a rating variable is to limit the perpetuation of negative stereotypes, so that men and women would receive equal treatment in the access to and supply of all goods and services. Equality and respect for human dignity and human rights are among the core values of the European Union (EU), reflected in several EU directives targeting discrimination. Initially signed in 1957, Article 10 of the Treaty on the Functioning of the European Union states:

In defining and implementing its policies and activities, the Union shall aim to combat discrimination based on sex, racial or ethnic origin, religion or belief, disability, age or sexual orientation.

Like other major upheavals, this turning point was precipitated by other events. In the U.S., a series of legal rulings and new laws led to prohibitions based on gender for retirement systems, c.f., McCarthy and Turner (1993). The U.S. Supreme Court issued decisions that prohibit pension plans from using separate mortality tables for men and women to determine contributions and benefits.

- 1) From the case of Los Angeles Department of Water and Manhart (1978), employers cannot require women to make larger contributions to a pension plan in order to receive the same monthly benefits as similarly situated men.
- 2) From the case of Arizona Governing Committee for Tax Deferred Annuity and Norris (1983), women cannot receive lower monthly benefits than men who had made the same contributions (this case was based on a defined contribution plan).

These decisions were based on the 1964 Civil Rights Act that prohibits employment discrimination because of an individual's race, color, religion, sex, or national origin. In 1986, the Equal Employment Opportunity Commission broadened the Supreme Court's prohibitions by forbidding sex-based differences in any employee benefit, even if justified by differences in cost.

Another major event that preceded the 2011 ruling was a European Union Council Directive in 2000 that prohibited discrimination based on racial and ethnic origin, European Union (2000). Prior to this directive, some insurers required an additional premium based on the risk criterion of the applicant being a "foreigner," c.f., Schmeiser, Störmer, and Wagner (2014). The 2011 ruling was based on European Union Directive 2004/113/EC, European Union (2004) (this earlier directive required equal treatment of men and women but provided an exception for the insurance industry). This ruling applies to all lines of insurance business; in contrast, for example, gender-based pricing of auto insurance is permitted in all but a handful of U.S. states (the exceptions being Hawaii, Massachusetts, Montana, North Carolina, Pennsylvania, and, in 2019, California). As part of the guidelines on the application of the 2011 ruling, the use of risk factors which might be correlated with gender, as long as they are true risk factors in their own right, is still permitted.

The retirement systems line of business is interesting because gender is an important predictor of longevity, c.f., Lemaire (2002). Women, in general, outlive men so they receive pension benefits over a longer period of time. For other lines of business such as personal auto, it is possible to find variables that provide a suitable substitute for gender, c.f., Ayuso, Guillén, and Pérez-Marín (2016). Section 6 explores the concept of proxy discrimination in more detail.

5.2 General Insurance and Credit-Based Scoring

An individual's credit history has long been used in commercial lines of insurance and in life insurance. As described by Brockett and Golden (2007), "Although it has been known since at least 1949 that credit history is related to driving accidents, the advent of high capacity, high-speed computers has made massive personal credit files available, and has made it feasible to routinely use this credit information for predicting insurance losses in personal lines of property and casualty insurance."

From FTC (2007), general insurers in the U.S. started to use credit history information for automobile pricing in the early 1980's. It became more routine with the development by Fair Isaac Corporation (FICO) scores in the mid 1990s, first for homeowners and then for auto. According to FICO, in the absence of state prohibitions, 95 percent of automobile insurers and 85 percent of homeowners insurers employ insurance scores in either the underwriting or rating process (NAIC 2012a), see also Morris, Schwarcz, and Teitelbaum (2017).

Credit-based insurance scores, or simply *insurance scores*, are similar to widely known credit scores in that both rely upon an individual's credit history. This credit history includes prior credit performance (e.g., late payments), current levels of indebtedness (e.g., bankruptcy), length of credit history (e.g., age of oldest account, average age of all accounts), pursuit of new credit (e.g., new accounts, mortgages), and types of credit used (e.g., department, travel, major bank credit cards). However, credit scores predict the risk of credit delinquency and so measures the financial well-being of a consumer. In contrast, an insurance score is designed to predict insurance losses and so assesses how well individuals manages their money.

Credit-based insurance scores summarize an individual's personal financial history; they do not exhibit the characteristics described in Section 2.2 that would lead them to being described as sensitive or *suspect*. However, as emphasized by Morris, Schwarcz, and Teitelbaum (2017), insurance scores are regulated because they potentially correlate with suspect classifications, in particular race and income. For this reason, in the U.S. most states regulate insurers' use of insurance scores in auto and home insurance, and a few states ban their use altogether (Avraham, Logue, and Schwarcz (2014), Avraham (2019)).

Credit-based insurance scores provide a natural example where the ability to predict insurance losses is well established (statistical discrimination) but the causal nature is uncertain. As noted by Brockett and Golden (2007), a poor credit score may not create (cause) an insured loss but it is a measure of underlying biological and psycho-behavioral traits that do affect insured losses. However, from Morris, Schwarcz, and Teitelbaum (2017), this is inconsistent with the fact that two of the major drivers of credit risk are unemployment and health problems, neither of which seems to reflect irresponsible behavior such as reckless driving or lack of fire safety. So, although both sources re-affirm that credit-based insurance scores provide a sound platform for predicting insurance losses, the causal nature remains unclear.

5.3 General Insurance and Price Optimization

Technical prices, that are based on expected claims, provide the foundations for most lines of general insurance, at least on the non-commercial, or personal, side. Traditionally, informal judgement has been used to adjust technical prices to become market prices; these adjustments are (i) for consistency among factors, plans, and over time, (ii) for competitors rates, and (iii) for impact on retention, c.f., CAS (2014). *Price optimization* refers to a systematic approach for making adjustments to traditional cost-based technical prices that incorporates customer demand.

Technical prices can be thought of as based on single-period models that focus on costs of insurance including claims and expenses. In contrast, the price optimization approach incorporate models of retention as well as prices of competitors typically by looking over several periods. For example, if an insurer raises prices, then that insurer can expect lower retention; the amounts depend on how sensitive the consumer is to price changes and the availability of the same coverage from the competition. By looking over several periods, price optimization models can tune prices to achieve an insurer's long-term goals, such as profitability or development of market share.

From an insurer's point of view, the use of price optimization tools is simply a sound business practice that is widely adopted in many industries, including retail and travel. Price optimization moves insurance pricing beyond expected costs to behavior including price sensitivity. At the individual consumer level, it may be that an insurer prices differently two consumers with the same risk profile because their anticipated price sensitivity differs, c.f. Section 3.3. Price sensitivity matters because it affects consumer retention and acquisition expenses for new business are generally higher than expenses for retaining a customer, c.f., CAS and Force (2015).

However, consumers have taken a dim viewpoint of price optimization (see a summary in CAS and Force (2015)). On the one hand, the ability to identify loyal customers suggests that these are the customers who would enjoy lower premiums because of the lower expenses associated with them. On the other hand, these are exactly the customers who are likely to stay (and remain loyal) when faced with price increases. Some critics argue that price sensitivity practices impose an unfair penalty on customer loyalty. Customers more likely to be loyal are less likely to shop for alternatives. Insurers will identify this tendency and so impose price increases on customers, not for their tendency to have high claims but rather for their tendency to be loyal.

Other critics argue that price optimization has been developed to increase insurers' profits by raising premiums on individuals who are less likely to shop around for a better price, and many of these people are low-income consumers. Consumer advocates assert that deviation from cost-based ratemaking through price optimization will disfavor those consumers with fewer market options, less market power and less propensity to shop around in particular, low-income and minority consumers. Thus, although insurers may be optimizing neutral objectives, the result of their actions can result in unintentional proxy discrimination.

Swayed by these arguments, many U.S. insurance state regulators have banned price optimization in personal lines insurance. As another example, price optimization and price discrimination is not illegal in Australia but it does give rise to consumer unease and is being scrutinized by regulators, ESL (2018).

5.4 Life Insurance and Genetic Testing

Genetic testing involves a type of medical test that examines chromosomes, genes, or proteins. The results of a genetic test can confirm or rule out a suspected genetic condition or help determine a person's chance of developing or passing on a genetic disorder. There are many different purposes for testing, including medical (such as diagnosing a genetic disease or predicting disease risk) and non-medical (such as confirming parentage or forensic investigation). Hundreds of genetic tests are currently in use and more are being developed, see, e.g. Born (2019).

Information from genetic tests is potentially sensitive. Following the structure in Section 2.2, the main reasons are because they are not under the control of an individual nor, in most cases, do they change over time. Only in rare instances (such as Huntington's disease) is a genetic condition known to cause an insured event such as death. When thinking about the standards of perpetuating negative stereotypes and historical precedence, the genetic tests themselves are new (and developing), so the historical impact of a specific test is minimal. Nonetheless, as noted by Avraham, Logue, and Schwarcz (2014), "Genetic discrimination in the context of health, life, and disability insurance immediately evokes Nazi Germany and its obsession with promoting the reproduction of more 'genetically desired' people and eliminating 'genetically defective' individuals."

Statistical discrimination is another important attribute. Earlier, Lehtonen and Liukko (2011) wrote "At least for the time being, genetic information is in most cases neither statistically nor economically significant for risk assessment from the insurance companies' point of view. The exceptions are the rare single-gene diseases, such as Huntington's disease, which inevitably or very likely result in death." As of this writing, this remains the case (c.f., Vukcevic and Chen (2018)); today, it is likely that including results from genetic testing will not materially alter an insurer's prices. However, insurers believe that this will change over time; that is, predictive ability of genetic testing will increase over time and will become salient in at least the life, disability, critical illness, and long-term care insurance marketplaces.

Insurers worry about genetic testing information because of information asymmetry concerns. Like the purchase of life insurance, the decision to undergo genetic testing is voluntary. When a potential policyholder has information about his or her health that is not shared with the insurance company, this could lead to anti-selection where poorer risks purchase more insurance and better risks purchase little or no insurance. From an insurer's viewpoint, one solution would be to allow insurers to require genetic testing, just as they are allowed to evaluate other aspects (e.g., weight, hypertension, and so forth) of a person's health. There is some evidence that prohibitions on using genetic testing information may materially affect insurer's claim costs, see e.g. Lombardo (2018).

In policy debates, arguments have been made for the position that genetic information is special and must therefore be treated differently from other types of medical information (sometimes known as *genetic exceptionalism*). One way that genetic testing differs from, e.g., blood pressure, is through the impact that it has on a person's willingness to undergo the testing for fear of being denied life insurance. As summarized by Prince (2019), "Empirical evidence shows that fear of genetic discrimination has led individuals across the globe to refuse to participate in genetic research projects or to fail to undergo recommended clinical testing." Nonetheless, this may be simply due to the evolving nature of the science of genetic testing. For an analogy to underscore this point, Born (2019) noted that "... over time, other types of medical tests – e.g., tests for cholesterol levels – were first considered controversial when initial evidence showed a wide variation in predicted value."

The social impact depends on the line of insurance business. In health insurance, the impact of genetic testing is less pronounced because many leading countries in the world offer government-provided health insurance or mandate the purchase of health insurance. Even in the U.S., that does not have government provided health insurance, results of genetic testing are not permitted under the Genetic Information Nondiscrimination Act (GINA). This act prohibits covered health insurers (and employers) from discriminating on the basis of genetic information that includes genetic test results, family medical history, and use of genetic services.

Some international conventions recommend restricting the use of genetic information for insurance purposes. The Council of Europe's Convention on Human Rights and Biomedicine prohibits the performance of genetic testing as a condition for entering into an insurance contract, (c.f., Lehtonen and Liukko (2011)). The United Nations Educational, Scientific, and Cultural Organization (UNESCO) in 1997 issued a Universal Declaration on the Human Genome and Human Rights. This was followed by a 2003 declaration that argued that genetic data and biological samples should not be accessible by insurance companies, among other actors (c.f. Prince (2019)).

While many countries have specific laws covering genetic testing, most of the regulations are not very detailed. Table 5.1 summarizes genetic testing regulations, from Klein (2017). Joly et al. (2020) provides another perspective on cross-country comparisons. Not only the science, but also the insurance regulation, of genetic testing continues to evolve. Several jurisdictions have passed or are considering legislative changes in the use of genetic testing information in underwriting insurance. For example, Canada passed federal laws in 2017 banning the use of all genetic information for business purposes, see e.g. Lombardo (2018). Within the U.S., Born (2019) documents recent proposals in the state of Florida. Further, in July 2020, Florida has passed a law that prohibits life insurers & long-term care insurers from canceling, limiting, or denying coverage, or establishing differentials in premium rates based on genetic information. As noted in Table 5.1, Australia has been active in considering genetic testing legislation.

Tuble 0.1. Genetic results roundles by Country, Source, Rich (201)	Table 5.1 :	Genetic	Testing	Prohibitions	by	Country.	Source:	Klein	(2017))
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Regulation Category	Country			
No regulation	China, Finland, India, Spain, United States			
No regulation with written or unwritten codes of conduct	Greece, Japan			
from insurance industry groups				
Prohibitions on insurers requiring applicants to take	$Australia^{\star}$			
a genetic test and prohibitions on discrimination if				
the applicant refuses to take a test				
Prohibitions or moratoriums on using results from	Germany, Netherlands, Switzerland,			
existing tests when policies are below certain limits	United Kingdom			
Prohibitions or moratoriums on using results from existing	Austria, Belgium, Canada, Denmark,			
tests at all, sometimes including	France, Ireland, Poland			
use of family history information	Portugal, Singapore			

* As noted in Vukcevic and Chen (2018), Australia has moved from the third (middle) category to the fifth (bottom) recently.

5.5 Big Data

As with all institutions, insurers are redefining the way that they do business with the increasing capacity and computational abilities of computers, availability of new and innovative sources of data, and advanced algorithms that can detect patterns in insurance activities that were previously unknown. Sections 6.3 and 6.4 summarize how these advanced algorithms can be used to mitigate discrimination issues.

Conceptually, Big Data does not alter the fundamental issues of insurance discrimination. This point was emphasized in Swedloff (2014), entitled "Risk Classification's Big Data (R)evolution." One can think of credit-based scoring and price optimization as simply forerunners of a long-term trend by insurers to gather more and more data about their current and potential customers. One might hope that machine-driven algorithms would eliminate human biases but, as documented by Barocas and Selbst (2016), these algorithms inherit the prejudices of authors of the algorithms and prior decision-makers. As another example, Bartlett et al. (2019) find that the use of algorithmic decision-making of mortgage loans in the U.S. results in significant proxy discrimination of Latin and African-American borrowers although significantly reduces discriminatory practices of face-to-face lenders.

Yet, Big Data is changing the way that insurers do business. With respect to insurance discrimination, Swedloff (2014) argues that the two main aspects of change are *privacy* and *proxy discrimination*. On the privacy front, some of this detailed information is provided

voluntarily by individuals to insurers and suggesting to some that it not be treated as sensitive.. This includes information from global position systems (GPS) that we put in our cars that underpin telematics, comparable devices for our homes (the *Internet of Things*), devices that we wear to improve our health, and so forth.

Still, insurers may also use other information that is not provided directly by individuals. Privacy issues are raised any time a carrier classifies risks on intimate, personal information, like HIV status, marital status, sexual orientation, or genetic information. Although not an insurance case, Swedloff (2014) discusses the highly publicized event where Target, a large U.S. department store, used analytics to predict which of its customers were pregnant. This information was passed on to the marketing arm who sent coupons for maternity clothing, nursery furniture, and the like, to women who were likely to be expecting a child. That is, without asking any customers about their pregnancy status or harvesting that data in particular, Target was able to predict extremely sensitive and personal information about its customers. Consumer advocates fear that similar information, such as where we go, movies that we watch, telephone calls and texts that we make, would be of interest to insurers ostensibly to be used for understanding consumers attitudes towards risk and the likelihood of making insurance claims.

Proxy discrimination, introduced in Section 2.3, occurs when a surrogate, or proxy, is used in place of a prohibited trait. As originally conceived, this proxy is a facially neutral trait, such as the size of an automobile's engine being used as a proxy for gender. In the world of Big Data, an equally important issue is that complex algorithms are being developed using literally thousands of traits (in the simple Target example, the analyst used only 25 traits to develop an effective pregnancy score). Thus, as emphasized by Prince and Schwarcz (2020), proxy discrimination may be unintentional; moreover, the insurer may not even be aware that it is engaging in discriminatory behavior due to the opaqueness of machine-driven algorithms. Proxy discrimination is particularly important for actuaries and so is further discussed in Section 6.

Although consumers may benefit from a marketplace where insurers can more accurately assess risks, there is also a potential loss of *transparency* in insurance pricing. There already exists a low level of consumer understanding and a low level of consumer engagement with insurance purchases. More complex data algorithms will impede efforts at transparency. As discussed by Richman, Rummell, and Wuthrich (2019), machine learning models are often more complex and less transparent than traditional models. Moreover, massive data sets and complex models do not make life easier for regulators. Insurance regulators need to review rating plans that incorporate complex predictive models. Many jurisdictions do not have sufficient in-house actuarial expertise to review such filings.

For a final note on Big Data, some have expressed a concern that highly individualized or personalized rates lose the benefit of risk pooling, e.g., ESL (2018) and Meyers and Van Hoyweghen (2018). Although this could be a problem for some portfolios, most insurance systems are based on diversification of pools of unrelated (independent) risks. This type of diversification does not go away when the risks are different as long as they are priced properly.

5.6 COVID-19

A pandemic is a global outbreak of disease and in early 2020 the world has seen the onslaught of a new coronavirus dubbed COVID-19, short-hand with the 'CO' for 'corona,' 'VI' for 'virus,' and 'D' for disease. The '19' is because it was first identified in 2019 (from the outbreak in Wuhan China). As with other parts of global economy, the disease has rocked the insurance industry. The lines of business most affected on the commercial side include workers' compensation, business interruption insurance, cyber liability, general liability, and event cancellation as well as health and travel insurance on the personal side. see e.g. Fannin (2020). Interestingly, automobile insurance claims have dramatically reduced (for the first part of 2020 at the time of this writing) due to travel restrictions; people are driving less and getting into fewer accidents.

Prohibiting Insurance Discrimination Based on COVID-19 Diagnosis. Insurance legislation is being introduced to prohibit discrimination based on the diagnosis of this disease. For example, the State of Wisconsin passed a law on 15 April 2020 that includes the following:

This bill prohibits insurers that offer an individual or group health benefit plan, pharmacy benefit managers, or self-insured governmental health plans from doing any of the following based on a current or past diagnosis or suspected diagnosis of COVID-19: establishing rules for the eligibility of any individual, employer, or group to enroll or remain enrolled in a plan or for the renewal of coverage under the plan; cancelling coverage during a contract term; setting rates for coverage; or refusing to grant a grace period for payment of a premium that would generally be granted.

As another example, on 14 April 2020, the Australian Competition and Consumer Commission has granted interim authorization to the Financial Services Council and its members to ensure front line healthcare workers are not excluded from coverage due to exposure to COVID-19. That means life insurers cannot use the exposure to COVID-19 as a factor for pricing or applying risk exclusions to any new policy. It is likely that other legal jurisdictions will undertake similar actions. From a narrow actuarial perspective, this legislation is about coverage and rating and so is important for actuaries. Further, in absence of legal restrictions, a competitive market would use diagnosis of COVID-19 like any other part of medical history, potentially predictive of future insurable events.

More broadly, this legislation has several implications. For example, in absence of this legal restriction, rates may well increase for grocery store workers, due to their exposure and increased *suspicion* of a diagnosis of COVID-19. Is this in the best interest of society? To sharpen understanding of the social and economic considerations presented in Sections 2 and 3, we now reflect on these principles in terms of COVID-19.

Social Justice Considerations of COVID-19 Insurance Prohibitions. By its very global nature, a pandemic brings out the social responsibility of an insurance pool described in Section 2.1.1. The line of business affected by COVID-19 may be viewed as social/public good (e.g. health insurance) or as an economic commodity (e.g., life insurance) but the responses to COVID-19 are certainly social. Just as when you build a dam it benefits everyone who lives in the areas (not just those who make contributions towards building it), in the same way societal measures for disease prevention (e.g., social distancing) are borne by the entire population.

Section 2.2 introduced variable attributes that influence fairness for insurance purposes. For a COVID-19 diagnosis:

- *Control.* Individuals have few controls as to whether they have disease symptoms due to its widespread impact on society.
- Mutability. The variable may change over time but not in a good way.
- *Causality/Statistical Discrimination*. For those that have recently contracted the disease, there is a known pathway to heightened mortality risk and healthcare costs. For those diagnosed with disease but have recovered, there are no known additional risks to mortality nor to morbidity.
- Limiting or Reversing the Effects of Past Prejudice. This is not an issue as COVID-19 is a new disease.
- Inhibiting Socially Valuable Behavior. If insurers were allowed to rate based on disease symptoms, it is likely that many would refuse testing which would inhibit scientific progress in addressing the disease, similar to genetic testing.

Proxy Discrimination. In the U.S., it is known that COVID-19 affects African-Americans more than other ethnic groups and that COVID-19 mortality rates are related to age. Thus,

insurer discrimination based on contracting COVID-19 could be viewed as an indirect path to race and, where pertinent, age discrimination.

Economic Considerations of COVID-19 Insurance Prohibitions

- Adverse Selection. It is likely that individuals would know about whether they had symptoms of COVID-19 without going through formal testing unknown to the insurer. This creates the potential for adverse selection.
- Competition. It is unlikely that any insurer will have private knowledge about the nature of the COVID-19 disease suggesting that marketplace competition is not an issue. However, some insurers may elect to pull out of the marketplace (such as with travel insurance), meaning that lack of supply may increase prices.
- Price Discrimination is not likely to be an issue with COVID-19.

Summary of COVID-19 Insurance Prohibitions For a pandemic, the weight of evidence suggests that societal concerns dominate and that a prohibition based on diagnosis, real or suspected, of COVID-19 is warranted. As insurers' lack data about its predictive abilities, it is unlikely that competition will be affected. Prohibitions of this nature increase consumer confidence in the insurance system. At a hopefully not too far date in the future, the COVID-19 will lose its pandemic status and become another disease that we have to deal with. At that time, special legislative actions for COVID-19 will lose their appeal.

6 Proxy Discrimination

Proxy discrimination, when a seemingly innocuous variable is correlated with a protected variable, can be a problem because it produces the same outcomes that would be obtained in the absence of restrictions based on directly predictive traits, c.f., Prince and Schwarcz (2020). This is true whether or not the surrogate is opaque to the insurer and the regulator.

6.1 Strategies for Mitigating Proxy Discrimination

Historically, the focus has been on introducing regulation that prohibits the use of protected variables, such as race, or surrogates thought to be proxies for protected variables, such as credit-based insurance scores. More recently and providing a greater challenge is how to mitigate proxy discrimination when the proxies are produced by opaque machine learning algorithms based on many variables. There are several strategies that policymakers can use to limit this latter type of discrimination, none of which are ideal.

- 1. Community Rating. At one end of the spectrum, proxy discrimination can be completely eliminated by removing the insurer's ability to discriminate entirely. This is the case in community rated plans where all policyholders pay the same price such as common in social insurance schemes.
- 2. Approved Variables. Another option is to specify variables that may be used instead of variables that may not be used. This is the strategy taken in the U.S. individual health insurance market under the Affordable Care Act (ACA). Specifically, insurers may vary rates based on only four factors, (1) whether a plan covers an individual or family, (2) geographic area, (3) age, and (4) smoking status. As described by Prince and Schwarcz (2020), the ACA prohibits discrimination on the basis of prior health history, pre-existing conditions, and sex.
- 3. Actuarial Justification. A third alternative is to restrict the use of protected variables, such as race, religion, and political affiliation, and to further limit the use of rating variables to only those that are actuarially justified, that is, statistically discriminatory. This is the case of the U.S. rules on unfair discrimination where variables induce price differentials that "reflect equitably the differences in expected losses and expenses." There are usually data disclosure requirements for actuarial justification. For example, in the case of insurance based on age discrimination in Australia, "the Commission and the President can require the disclosure of the source of the actuarial or statistical data". And for the case of insurance based on sex discrimination in Australia, there are clients related data disclosure provisions, see the Appendix of Frees and Huang (2021) for further details.
- 4. Limited Prohibitions. A fourth strategy is to only restrict the use of protected variables (including their proxies) such as gender. This is the model followed by the European rules. However, as noted in Frees and Huang (2021), European regulation permits the use of risk factors correlated with gender as long as they are risk factors in their own right.
- 5. No Restrictions. At the other end of the spectrum, an option is to have no prohibitions. This is the case for most lines of commercial insurance.

Within this broad spectrum, there are many variations that regulators could consider particularly for the third and fourth strategies that permit some insurer discretion. One possible solution is to focus on transparency-oriented reforms that require insurers to disclose information on how their algorithms are working and possibly the sources of their data.

6.2 Linear Model Strategies

Another possible solution is to require insurers to use only variables that contain no protected information. To see how this might work in practice, consider data that we can represent as y, an outcome of interest such as an insurance claim and a set of predictor or rating variables. Further decompose the rating variables into components, those that are permitted, or not protected, by the regulators X_{NP} (non-protected variables) and those that are potentially contentious or protected, X_P . Following the work of Aseervatham, Lex, and Spindler (2016), we can consider y to be an auto insurance claim, X_P an indicator for gender, and X_{NP} to be a collection of other variables that includes age, type of car, location, and so forth.

In absence of regulatory restrictions, the actuary would consider all variables. For ease of interpretation, consider a "full" linear regression model, $y = \mathbf{1} \ \beta_0 + X_P \ \beta_1 + X_{NP} \ \beta_2 + \epsilon$, with predictors of the form

$$\hat{y}_{full} = \mathbf{1} \ b_0 + X_P \ b_1 + X_{NP} \ b_2. \tag{1}$$

In the presence of regulatory restrictions, the actuary could consider a restricted model, $y = \mathbf{1} \ \beta_{0,1} + X_{NP} \ \beta_{2,1} + \epsilon_1$, with predictors of the form

$$\hat{y}_{restricted} = \mathbf{1} \ b_{0,1} + X_{NP} \ b_{2,1}.$$
(2)

For a sensitive variable X_P to be the subject of contention, it often is correlated with an outcome y. So, one might expect for there to be a drop in the predictive ability when moving from the full information predictors \hat{y}_{full} to the restricted ones, $\hat{y}_{restricted}$. In point of practice, often there is a strong relationship of X_P with the other predictor variables X_{NP} . When X_P is dropped, the other variables serve as proxies for the omitted variable. For example, in their study, Aseervatham, Lex, and Spindler (2016) found that this was largely the case, the interesting exceptions being for younger and older drivers. As another point of practice, if a variable is dropped (such as gender), then it is likely that insurers may seek to incorporate new variables that also serve as proxies ("gender-like") for the protected variables.

When a variable is dropped, the impact of the other factors changes, as quantified by the regression coefficients moving from b_2 to $b_{2,1}$. This is not always desirable and so, to mitigate this drawback, Pope and Sydnor (2011) proposed an alternative predictor

$$\hat{y}_{PS} = \mathbf{1} \ b_0 + \bar{X}_P \ b_1 + X_{NP} \ b_2, \tag{3}$$

where \bar{X}_P is the average over the protected variables. Here, the coefficients b_0 , b_1 , and b_2 are from the full model. These predictors are blind to the protected variables in that two

individuals who differ only in their protected characteristics will receive the same predicted value from the model. However, as with \hat{y}_{full} and $\hat{y}_{restricted}$, \hat{y}_{PS} can be correlated with the protected variables. In words, the average predicted values will vary across protected groups because of differences in other characteristics across groups. Please note, the Pope-Sydnor model is not restricted to linear models, as shown in Lindholm et al. (2020).

As another option, there may be instances when the actuary would like to have a rating scheme that is totally unrelated to any sensitive or protected variables. For example, one can imagine using only that information that is uncorrelated to a set of protected variables under contention.

To this end, create a set of variables that are uncorrelated to X_P by defining $X_1 = (\mathbf{1} X_P)$, the projection matrix $Q = I - X_1 (X'_1 X_1)^{-1} X'_1$ and the transformed variables $X_{NP}^{\star} = QX_{NP}$. Then, with the new variables, one uses the usual least square procedures to get $b_2^{\star} = (X_{NP}^{\star} X_{NP}^{\star})^{-1} X_{NP}^{\star} y$. Some standard matrix algebra shows that $b_2^{\star} = b_2$, that is, the regression coefficients from the transformed variables equals the regression coefficients in the full model. See for example Frees (2009), page 141. From this, the predictors are

$$\hat{y}_{FH} = \mathbf{1} \ \bar{y} + X_{NP}^{\star} \ b_2. \tag{4}$$

By construction, these predictors are uncorrelated with the sensitive, protected, variables.

6.3 Empirical Example

To see how these strategies might work in a real insurance context, we analyze 4624 claims from Australian automobile insurance drawn from De Jong and Heller (2008). So that our work can be easily replicated, we use the data from the R package CASdatasets that slightly differs from the de Jong and Heller book in the coding of the variables. Statistical code, using the freely available software R is in the Appendix of a supporting document Frees and Huang (2021).

For this analysis of claims severity, ClaimAmount, we focus on a potential protected variable, Female, indicating if the policyholder is female. Other variables relevant to claims severity for these data are VehValue, the vehicle value in thousand of Australian dollars, and DrivAge, the age and employment status of the policyholder. A preliminary examination of the data (not included here but available, for example, in De Jong and Heller (2008)), show that the distribution of claims is skewed. From this and customary industry practice, we fit a gamma distribution with a logarithmic link. The analysis summarized in Table 1 shows that Female is an important predictor of claim amount.

This model could be readily used for predicting claims severity. For illustrative pur-

	Estimate	Std. Error	t value	$\Pr(> t)$
(Intercept)	7.984	0.093	85.580	0.000
VehValue	-0.012	0.022	-0.521	0.602
DrivAgeold people	-0.411	0.104	-3.946	0.000
DrivAgeolder work. people	-0.292	0.093	-3.134	0.002
DrivAgeoldest people	-0.353	0.119	-2.967	0.003
DrivAgeworking people	-0.293	0.093	-3.144	0.002
DrivAgeyoung people	-0.199	0.096	-2.073	0.038
Female	-0.179	0.052	-3.450	0.001

 Table 1: Gamma Regression Model 1 Summary

poses, the left-hand panel of Figure 1 shows the distribution of fits for the same portfolio of policyholders used to fit the data; the right-hand panel shows the distribution by gender.



Figure 1: Distribution of Claim Amounts

The right-hand panel of Figure 1 shows significant differences by gender. To address this, the model was re-fit excluding gender and the fitted values are labeled as Model 2. As another alternative, we fit a model using the orthogonalized versions of the VehValue and DriveAge variables, making each variable uncorrelated with Female. This results in Model 3. Then, we developed a proxy for the probability of being female, using automatic variable selection techniques, with VehValue and DriveAge as inputs but also including additional variables in the dataset that were not helpful predictors of ClaimAmount. We added this

	M.1 Coef	M.1 t	M.2 Coef	M.2 t	M.3 Coef	M.3 t	M.4 Coef	M.4 t	M.5 Coef	M.5 t
(Intercept)	7.98	85.58	7.88	89.45	7.61	156.37	8.16	50.19	7.89	54.92
VehValue	-0.01	-0.52	0.00	-0.13	0.00	-0.14	-0.02	-0.88	-0.02	-0.91
DrivAge.old people	-0.41	-3.95	-0.42	-4.01	-0.43	-4.06	-0.45	-4.22	-0.45	-4.26
DrivAge.older work people	-0.29	-3.13	-0.31	-3.24	-0.30	-3.19	-0.30	-3.18	-0.30	-3.14
DrivAge.oldest people	-0.35	-2.97	-0.34	-2.85	-0.35	-2.93	-0.38	-3.13	-0.39	-3.21
DrivAge.working people	-0.29	-3.14	-0.32	-3.39	-0.31	-3.27	-0.30	-3.21	-0.29	-3.11
DrivAge.young people	-0.20	-2.07	-0.21	-2.20	-0.21	-2.16	-0.22	-2.25	-0.21	-2.22
Female	-0.18	-3.45	NA	NA	NA	NA	-0.42	-2.08	-0.43	-2.12
AIC	79365.63	NA	79391.08	NA	79390.49	NA	79382.40	NA	79381.38	NA

 Table 2: Gamma Regression Model Summary

predictor to Model 2 and to Model 3, resulting in Models 4 and 5, respectively. Finally, we developed the Pope-Sydnor predictors from Model 1, the results of these fits are labeled as Model 6. This development is detailed in an Appendix of Frees and Huang (2021).

Table 2 summarizes results from the first five models (the repetition of Model 1 is included for comparison purposes). From Model 1, females have significantly lower claims. Similarly, from Models 4 and 5, a higher probability of being female implies a lower expected claim amount. From the AIC goodness of fit statistics, Model 1 is the best fit. Models 2 and 3 are similar and exhibit a markedly worse fit than Model 1. It is interesting that Model 3 does not perform that much worse than Model 2; that is, removing effects of gender from the other predictor variables does not do that much damage to the overall model fit. Models 2 and 3 are significantly improved by including the proxy for being female, as shown in Models 4 and 5.

Table 3 shows the means of the fitted values by gender under each model, including the Pope-Sydnor predictors. These fits are rescaled so that they have the same mean, thus promoting comparability. Figure 2 expands upon this by showing the corresponding distributions. The base Model 1 displays the biggest discrepancy between male and female distributions, suggesting that corresponding prices calculated using this procedure would be the largest among the alternatives considered. Model 2 is the only fitting procedure that does not require knowledge of the protected variable Female. Fits from Model 3 are very similar to those of Model 2 (it turns out that the Spearman correlation between fits is 0.994); further, Model 3 is attractive because it only uses predictors that are uncorrelated with the protected variable Female. The fits from Model 4 uses the same base variables as Model 1 but replaces the protected variable with a proxy. Coefficients of the proxy are determined using the protected variable but, once the coefficients have been determined, the proxy depends only on known covariates, not the protected variable. As with the comparison between Models 2 and 3, Model 5 is similar to Model 4 but uses only covariates uncorrelated to the protected variable (in addition to the proxy variable). Using Model 6, two individuals who differ only in gender will have the same fitted values from the model. However, it does

Table 3: Comparison of Means by Predictors and Gender

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Male	2215.56	2011.80	2013.42	2045.96	2050.74	2007.63
Female	1863.01	2015.06	2013.85	1989.57	1986.00	2018.17

2 5 6 1 3 4 3000 -Fitted Claim Amounts Q Ø 2500 2000 1500 0 1 0 ò ò ò Ó 1 Ò 1 Gender (Female=1, Male=0)

not ensure equal values across the protected groups (two genders) as shown Table 3.

Figure 2: Boxplots of Fitted Claim Amounts by Model and Gender

6.4 Machine Learning Approaches

Recent years have seen an increasing trend in using big data and machine learning techniques in various actuarial practices, as introduced in Section 5.5. They are usually praised for superior out-of-sample forecasting performance, but can also be opaque in insurance discrimination. Mehrabi et al. (2019) identified two potential sources of unfairness in machine learning: biases in data and algorithms. Data (especially big data) can be heterogeneous and creates bias in many different ways, which may lead to unfair results when a model learned from biased data. Algorithms may also lead to unfair decisions even when data are unbiased. To the best of our knowledge, there has been limited research in the actuarial/insurance literature discussing how to measure and manage discrimination using machine learning approaches. For example, Loi and Christen (2019) provide an ethical analysis of private insurance discrimination and fairness in machine learning. They distinguish morally permissible and impermissible forms of statistical discrimination in private insurance and derive some ethical implications for the use of machine learning techniques in the insurance context. Although the motivating applications are typically not insurance related, the machine learning field has seen an explosion of research on fairness. See, for example, the survey papers Zliobaite (2015), Romei and Ruggieri (2014), Mehrabi et al. (2019) and Chouldechova and Roth (2018). This literature provides discussions and debates on how to define fairness of predictive models and how to measure the performance in terms of discrimination. For example, Kleinberg, Mullainathan, and Raghavan (2016) formalize three core fairness conditions in algorithmic classification that correspond to notions of fairness: calibration within groups, balance for the negative class, and balance for the positive class. They find that except in highly constrained cases, there is no method that can satisfy the three conditions simultaneously. The results suggest thinking about the trade-offs between the notions of fairness.

Following Mehrabi et al. (2019), we summarize three ways for discrimination prevention: pre-processing, in-processing, and post-processing. Data pre-processing removes the discrimination information from the historical data (target or input variables) and then applies regular machine learning approaches for model estimation, for example see Kamiran and Calders (2012) and Calders and Žliobaitė (2013). Most of the linear model strategies introduced in Sections 6.2 belong to this category. In-processing techniques modify the learning algorithms by incorporating changes into the objective function or adding additional constraints to remove discrimination in the model learning phase, for example, see Kamishima et al. (2012). Post-processing modifies a fitted regular model to remove discrimination. For example, Kamiran, Calders, and Pechenizkiy (2010) post-processing decision trees with discrimination-aware pruning and relabeling of tree leaves. The discrimination-free pricing model introduced in Pope and Sydnor (2011) also belongs to this category.

Machine learning approaches generally require knowledge of both protected and nonprotected variables. However, for legal or commercial reasons organizations (including insurers) may not hold data of protected variables, such as gender, race and ethnicity, which poses challenges to mitigating discrimination, c.f., Miller (2009). Veale and Binns (2017) introduces and discusses three potential approaches to deal with this problem, including (1) having trusted third parties to store data necessary for incorporating fairness constraints in modelling, (2) building collaborative online platforms to allow diverse organisations to share and access knowledge required to promote algorithmic fairness, and (3) using unsupervised learning and pedagogically interpretable algorithms to incorporate fairness hypotheses for further selective testing and exploration.

Despite the explosion of interest and volume of work that has been produced and published in recent years, the theory and application of discrimination-aware machine learning is still in a nascent state, especially in the context of insurance practice.

7 Conclusions

Understanding the insurance prohibitions landscape is important for actuaries and other financial analysts. Actuaries are heavily involved in setting of insurance prices. They are also often influential in determining the scope of insurance contractual coverages as well as whom the company insures, both initially and at renewal. Our position is not that actuaries should dictate whether or not use of information should be restricted or prohibited. Rather, choices regarding insurance prohibitions involve policy choices that should also involve legal and economic scholars, as well as government representatives and advocates for the industry and for consumers. Actuaries can make important contributions to these discussions by quantifying the financial impact of policy alternatives. This article helps actuaries to present financial cost recommendations in a meaningful way by summarizing different perspectives that other participants may entertain when considering insurance prohibitions.

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Online Supplement to: The Discriminating (Pricing) Actuary

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Abstract: This is online supplement provides and extended abstract, a description of regulation by jurisdiction, several appendices, and an annotated bibliography.

Keywords: Actuarial fairness; disparate impact; proxy discrimination; unisex classification; credit-based insurance scores; price optimization; genetic testing; big data; COVID-19

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Extended Abstract

The insurance industry is built on risk classification, grouping insureds into homogeneous classes. Through actions such as underwriting, pricing and so forth, it differentiates, or discriminates, among insureds. Actuaries have responsibility for pricing insurance risk transfers and are intimately involved in other aspects of company actions and so have a keen interest in whether or not discrimination is appropriate from both company and societal viewpoints. This paper reviews social and economic principles that can be used to assess the appropriateness of insurance discrimination. Discrimination issues vary by the line of insurance business and by the country and legal jurisdiction. This paper examines social and economic principles from the vantage of a specific line of business and jurisdiction; these vantage points provide insights into principles. To sharpen understanding of the social and economic principles, this paper also describes discrimination considerations for prohibitions based on diagnosis of COVID-19, the pandemic that swept the globe in 2020.

Insurance discrimination issues have been an important topic for the insurance industry for decades and is evolving in part due to insurers' extensive use of *Big Data*, that is, the increasing capacity and computational abilities of computers, availability of new and innovative sources of data, and advanced algorithms that can detect patterns in insurance activities that were previously unknown. On the one hand, the fundamental issues of insurance discrimination have not changed with Big Data; one can think of credit-based insurance scoring and price optimization as simply forerunners of this movement. On the other hand, issues regarding privacy and use of algorithmic proxies take on increased importance as insurers' extensive use of data and computational abilities evolve.

1 Regulation by Jurisdiction

1.1 U.S. Insurance Discrimination Legal Environment

The U.S. is the largest general insurance marketplace, to illustrate, it comprised about 37% of the 2017 world market (in terms of gross direct premiums, see Table 7 of GIAJ (2019), SwissRe (2018)). In the U.S., discrimination laws and regulations affecting insurance appear at both the federal (national) and state level.

1.1.1 U.S. Federal Laws and Regulations

There is a host of federal laws directing towards mitigating discrimination in employment. These laws take a broad view of employment and include fringe benefits such as retirement benefits. As noted in Section 5.1 of Frees and Huang (2020), of Frees and Huang (2020), these laws, such as the 1964 Civil Rights Act, are now known to limit the use of gender in retirement benefits. For other limitations, the U.S. Equal Employment Opportunity Commission, charged with enforcing these laws and regulations, decomposes discrimination into the following types: age, disability, equal pay/compensation, genetic information, harassment, national origin, pregnancy, race/color, religion, retaliation, sex, and sexual harassment.

In a separate but related set of laws, the Genetic Information Nondiscrimination Act of 2008 (GINA) protects individuals against employment discrimination on the basis of genetic information. As described in Section 5.3 of Frees and Huang (2020), GINA also prohibits covered health insurers from discriminating on the basis of genetic information that includes genetic test results, family medical history, and use of genetic services.

The U.S. Department of Health and Human Services Office for Civil Rights enforces federal civil rights laws, including conscience and religious freedom laws. In particular, for individual health insurers, this includes the Patient Protection and Affordable Care Act of 2010 (ACA), the comprehensive health care reform law that addresses health insurance coverage, health care costs, and preventive care. Section 1557 of this act states that individuals shall not be excluded from participation in, be denied the benefits of, or be subjected to discrimination on the grounds of race, color, national origin, sex, age, and disability.

The Fair Housing Act, enacted in 1968, prohibits discrimination in housing-related activities and is now interpreted to include homeowners insurance. Specifically, it is illegal to discriminate because of the race, color, religion, sex, disability, familial status, or national origin of the owner and/or occupants of a dwelling. See, for example, the Department of Housing and Urban Development's Implementation of the Fair Housing Act's Discriminatory Effects Standard.

In a similar vein, the Equal Credit Opportunity Act is a federal financial regulation

law enacted in 1974. The act prohibits discrimination on the basis of race, color, religion, national origin, sex, marital status, or age in credit transactions.

Despite these laws and the accompanying regulations, insurance discrimination is largely unregulated at the federal level, leaving the states as the primary regulators of insurer discrimination.

1.1.2 U.S. State Laws and Regulations

Enacted in 1945, the McCarran-Ferguson Act clarified that the states regulate and tax the business of insurance. Efforts of the different states are coordinated by the National Association of Insurance Commissioners (NAIC). This organization is governed by the chief insurance regulators from the 50 states, the District of Columbia and five U.S. territories. The NAIC established standards and best practices that each state may choose to adopt, NAIC (2011). To complement this organization, a U.S. Federal Insurance Office was created in 2010 as an information gatherer to inform the U.S. Congress on insurance matters. The Federal Insurance Office was granted limited authority to enter into covered agreements with other nations on insurance regulatory matters and represents the U.S. with the International Association of Insurance Supervisors.

Despite the structure offered by the NAIC, Avraham, Logue, and Schwarcz (2014) documents a lack of uniformity in state insurance anti-discrimination regulations. Their work demonstrates that affirmative bans of insurer discrimination on the basis of potentially suspect policyholder traits are rare. To illustrate, from their study, "only nine states ban the use of age in auto insurance; only six states ban the use of genetic testing in disability insurance; and only two states ban ... the use of location or zip code in property/casualty insurance." This lack of uniformity is also observed by Werner and Modlin (2016), who state:

Some states have statutes prohibiting the use of gender in rating insurance while others permit it as a rating variable. As a result, an insurer writing in multiple states may include gender as a rating variable in those states where it is permitted, but not include it in a state that prohibits its use for rating. Some states may allow the use of a rating variable, but may place restrictions on its use. For example, some states allow credit score to be used for rating personal insurance for new business, but do not allow insurers to raise the rates for renewal risks should the insured's credit score improves). Some states also prohibit certain variables from use in the rating algorithm but allow their use in underwriting. Underwriting variables may be used to guide risk selection decisions, but could also guide risk placement decisions.

1.2 European Union

The European Union (EU) is the second largest general insurance marketplace. It comprised about 22% of the 2017 world market (in terms of gross direct premiums, see Table 7 of GIAJ (2019), SwissRe (2018)). This does not include the United Kingdom which represented about 4% in 2017.

1.2.1 EU Directives

The EU is a political and economic union of 27 member countries, not counting the United Kingdom which left in January 2020. The European Commission serves as its executive branch and, among other duties, has the power to propose new laws. For insurance purposes, legislation takes the form of directives, a type of legislative instrument that allows members the freedom to interpret the demands of EU law within their own legislative traditions. For example, Section 5.1 of Frees and Huang (2020), remarked on the 2004 Gender directive with the related court actions. Thus, the requirements set out in the directives have to be interpreted and implemented in each member country by national legislation. In contrast, the U.S. NAIC promulgates model laws and regulations but the states are not required to enact them.

Insurance pricing was essentially deregulated in the EU in 1994 with the introduction of the Third Generation Insurance Directive. Prior to the directive, the European insurance business was mostly embedded in a dense regulatory network. Implementing the 1994 deregulation yielded intensive price competition, primarily lowering prices but in some cases, such as Italy, raising prices, see, for example Hussels, Ward, and Zurbruegg (2005) and FCA (2019).

Equality and respect for human dignity and human rights are among the core values of the EU, reflected in several EU directives targeting discrimination. Initially signed in 1957, Article 10 of the Treaty on the Functioning of the European Union states:

In defining and implementing its policies and activities, the Union shall aim to combat discrimination based on sex, racial or ethnic origin, religion or belief, disability, age or sexual orientation.

However, as summarized in a report was commissioned by the European Commission, Civic Consulting (2010), there is a patchwork of legislative and regulatory measures across the member countries that deal with discrimination. The majority of countries prohibit any form of discrimination, with no exceptions, on the grounds of racial/ethnic origin, religion/belief and sexual orientation. Treatment of age and disability is less uniform.

1.2.2 EU Member Countries Laws and Regulations

Some member countries regulate conditions that affect the determination of insurance premiums. One example of this is the automobile insurance bonus-malus system in France. Although auto insurance rate levels are not subject to explicit constraints, the premiums are adjusted by a bonus-malus coefficient (set by law) that considers a driver's past experience. Another set of examples are the restrictions based on non-risk pricing, introduced in Sections 3.3 and 5.3 of Frees and Huang (2020). As described in FCA (2019), Belgium and Italy (as well as non-EU Switzerland) have introduced rules that should limit the use of non-risk based factors in the pricing of insurance.

1.3 China

China is the third largest general insurance marketplace. It comprised about 10% of the 2017 world market (in terms of gross direct premiums, see Table 7 of GIAJ (2019), SwissRe (2018).

As discussed by Chen et al. (2014), there are three levels in the Chinese insurance regulatory system. First, the National People's Congress and its Standing Committee jointly exercise the power to enact laws in China, including the Insurance Law. Second, the State Council, which is the chief administrative authority of China, develops administrative regulations. Third, the primary regulator of the private insurance market is China Insurance Regulatory Commission (CIRC), which is a functional department of the State Council. There are also industry organizations, including the Insurance Association of China (IAC) and "Intermediary Associations" for insurance intermediaries at the provincial and city levels. The IAC, founded in 2001, is a not-for-profit organization authorized by the CIRC and registered by the National Ministry of Civil Affairs. These organizations formulate industry standards and provide professional industry guidance to constrain unfair activities and strengthen self-discipline.

The Insurance Law was first approved and implemented in 1995 and then modified in 2002 and 2009. In the Insurance Law, the item related to insurance discrimination is Item 114, which states that "Insurance companies should obey the insurance regulations and set insurance premium rates fairly and reasonably, which should not harm the legitimate rights and interests of policyholders, insureds and beneficiaries." However, this law does not specify how to judge the "fairness" and "reasonableness" (Zhou (2014)).

There are no insurance discrimination prohibitions in the "property insurance regulations" and the "life insurance regulations". The only discrimination related regulation is in 'auto insurance rate making procedures and core content (2002)', which requires insurance rating schedules must be reasonable without any discrimination content. However, it again does not specify nor explain the definition and extent of 'discrimination'.

The Chinese auto insurance market is comprised of compulsory and voluntary components. The CIRC strictly regulates the pricing of compulsory auto insurance. The only pricing factors are vehicle type and past claim experience. Since 2015, there have been significant regulation changes for voluntary auto insurance. The auto insurance pricing formula depends on a benchmark pure risk premium (determined by the Insurance Association of China), a surcharge rate (management fee, no more than 35%, determined by insurers), and and several rate adjustment coefficients, including ones for no claims discount, traffic violation, underwriting, and a "channel." The benchmark pure risk premium uses only vehicle related information (usage and type) as pricing factors. According to CIRC price guidelines, from 2017 the underwriting coefficient can range within (0.7/0.75/0.8, 1.15/1.25) and the independent channel coefficient within (0.7/0.75, 1.15/1.25) for different provinces. From April 2018, the CIRC approved a pilot experiment in Shaanxi, Guangxi and Qinghai to allow for independent pricing in those provinces. For details of the regulation changes of Chinese auto insurance, please refer to Appendix Section 2.3.

Chinese insurers use life tables published by CIRC for life insurance pricing. For example, the current version is China Life Insurance Mortality Table (2010-2013). The mortality rates in the insurance life tables are age, gender, and product specific. In particular, it has three product categories, including annuities/pension, term life insurance, and whole life insurance.

Like many other insurance markets, age is a commonly used pricing factor in the Chinese life insurance market. Chinese auto insurers also set different rates for different age groups in general insurance practice. For example, age groups below 25 and above 60 are usually treated as high-risk groups with 1.05 rate adjustment coefficient, while the age group between 30 and 40 can be treated as low-risk group with 0.95 risk adjustment coefficient. Gender has also been widely used as a pricing factor in the Chinese insurance market. For example, higher rates applies to males purchasing life insurance and females purchasing annuities. In business auto insurance, many insurers set the adjustment coefficients to be 0.95 for females and 1.00 for males with reference to the basic insurance rating table issued by the government. There are no laws or regulations prohibiting the use of disability, race, or religion related factors in insurance pricing.

1.4 Japan

Japan is the fourth largest general insurance marketplace. It comprised about 5% of the 2017 world market (in terms of gross direct premiums, see Table 7 of GIAJ (2019), SwissRe (2018)).

For additional context, the regulator of the Japanese insurance market is the Financial Services Agency. Insurers operating in Japan have formed the General Insurance Association of Japan whose objective is "to promote sound development and maintain reliability of the general insurance business in Japan, ..." Among other activities, this organization actively participates in the International Association of Insurance Supervisors (IAIS) in its standard setting activities. Industry statistics and representative rates are gathered by the General Insurance Rating Organization of Japan. This is a Japanese non-profit, private corporation with a membership comprised of general insurance and reinsurance companies.

The Japanese general insurance market is dominated by personal lines, with about 55% from the auto market, 7% from fire dwelling, and 12% from personal accident insurance, (based on 2017 premium statistics from GIAJ (2019)). The auto market is split into a compulsory liability component, known by the acronym CALI, at about 11% of market share, and the larger voluntary component at about 44% of market share. In terms of insurance pricing, CALI premium rates are calculated by the General Insurance Rating Organization of Japan. In this pricing scheme, automobiles are classified by type, size and use, and are designed to be non-profit. As the name suggests, anyone purchasing an automobile must purchase CALI insurance that pays damages for anyone killed or injured by an insured vehicle.

Voluntary insurance includes third-party liability coverage (bodily injury liability and property damage liability), self-incurred personal accident coverage, and own vehicle damage coverage. With respect to liability for bodily injury, voluntary insurance acts as excess cover for compulsory insurance. Prior to 1998, the auto insurance product was similar across firms. Rates and policies were strictly regulated, and underwriting was limited. In 1998, the marketplace was liberalized to a prior approval system where insurers submit rating plans to the Financial Services Agency who examines the rates on the basis of three principles of premium rates, that they be reasonable, adequate and not unfairly discriminatory (see Section 5.1 of Frees and Huang (2020),). Permissible rating factors include driver's age, gender, driving history, usage, pattern of use, geography, vehicle type, vehicle safety features, and multi-car ownership. In particular, for age, "Any number of categories allowed, but differentials between the highest and lowest rated groups to be within a range of 300%". As another example, for gender, "Segmentation allowed, but differentials between male and female to be within a range of 150%" (Source: GIAJ (2017)). In Japan, mechanisms for mitigating discrimination appear to be different than in other marketplaces perhaps due to the relatively homogeneous culture. Another possible explanation is that industry organizations work diligently with member insurers to mitigate public concerns of potentially awkward situations prior to legislative action. As one example, the General Insurance Association of Japan publishes *Personal Information Protection Guidelines* to encourage member insurers to protect personal information. This is meant to be in accord with the Japanese Protection of Personal Information Act, brought into effect in 2003 and amended in 2017. To ensure consumer protection, during the advance product approval processes for personal lines, the basic principles of reasonableness, adequacy, and not being unfairly discriminatory are considered, along with regular risk category reviews. Algorithms are also required to be explained within the processes.

As another example, the Life Insurance Association of Japan, another industry organization, has said its member firms do not use genetic information to make decisions about coverage, the subject of Section 5.4 of Frees and Huang (2020). Nonetheless, the association acknowledges that people with genetic diseases and private groups supporting them have voiced concerns about discrimination in the absence of laws prohibiting insurers from gaining such data. See Japan Times News (2019).

1.5 Australia

Australia is the tenth largest general insurance marketplace. It comprised about 2% of the 2017 world market (in terms of gross direct premiums, see Table 7 of GIAJ (2019), SwissRe (2018)). Australia has anti-discrimination legislation at the federal, state and territory levels. Commonwealth laws and the state/territory laws generally overlap and prohibit the same type of discrimination. Although there are differences in detail, all anti-discrimination legislation reflects the same paradigm for identifying unlawful discrimination Australian Law Reform Commission (2010).¹

1.5.1 Australian Federal Laws and Regulations

There are four federal acts containing provisions relevant to discrimination in insurance, the Age Discrimination Act 2004 (ADA), the Sex Discrimination Act 1984 (Cth)(SDA), the Racial Discrimination Act 1975 (Cth)(RDA) and the Disability Discrimination Act 1992 (Cth)(DDA). Prohibitions on the use of genetic information in insurance are most likely to

¹An unlawful discrimination act or mission must be based on one of the grounds or attributes set out in the legislation, such as sex, race or disability; fall within an area of activity set out in the legislation, such as employment or the provision of goods and services; result in some harm or less favorable treatment, whether by direct or indirect discrimination; and not fall within an exception, exemption or defense.

be brought under the DDA. These acts include general provisions applying to the supply of goods and services, including insurance. As an example, Section 24 of the DDA can be found in the Appendix Section 2.2.

Use of age, disability and gender may be allowed in certain circumstances in that ADA, DDA and SDA all contain exceptions relating to the provision of insurance. Insurance exceptions in the acts contain elements similar to those in Section 46 of the DDA, which applies both to the refusal to offer insurance (Section 46(1)) and to the terms or conditions on which it is offered (Section 46(2)). The details of the statement of Section 46(1) can be found in Appendix Section 2.2. There is no exception for discrimination in insurance based on race, even if one can establish the statistical and actuarial relevance of race information.

Australia does not have a stand-alone religious anti-discrimination law, similar to federal laws that protect against discrimination based on age, sex, race, and disability. However, Australia has a legal obligation to protect the right to religious freedom under a treaty known as the International Covenant on Civil and Political Rights. Domestically, there are a variety of laws that protect religious freedom. In August and December 2019, the Federal Attorney-General released the first and second exposure drafts of the Religious Discrimination Bill 2019 (Cth), which will make it unlawful to discriminate on the ground of religious belief or activity in a range of areas of public life. There is no insurance exception in those drafts.

1.5.2 Australian State Laws and Regulations

Each state and territory in Australia has its own anti-discrimination acts with its own insurance exceptions².

In Australian insurance practice, age is commonly used to discriminate, or differentiate, treatment among insureds with few regulatory constraints for the personal lines. For example, auto insurers use the age of the owner/driver of the car as a pricing factor. Life insurers consider the age of the policyholder as a pricing factor. They may also have age constraints to access specific insurance contracts. For example, it is common to require ages 16 - 65 in order to apply for the life cover and to require ages 16 - 55 to apply for critical illness cover or permanently unable to work cover.

Gender and disability are also commonly used pricing factors for the personal lines. For example, auto insurers use the gender and disability of owners/drivers of the car as pricing factors. Life insurers apply the gender and state of health of the policyholder as pricing factors.

²Discrimination Act 1991 (ACT) s 28; Anti-Discrimination Act 1992 (NT) s 49; Anti-Discrimination Act 1977 (NSW) s 49Q; Anti-Discrimination Act 1991 (Qld) ss 74, 75; Equal Opportunity Act 1984 (SA) s 85; Anti-discrimination Act 1998 (Tas) s 44; Equal Opportunity Act 1995 (Vic) s 43; Equal Opportunity Act 1984 (WA) s 66T.

In the Australian auto market, Compulsory Third Party (CTP) insurance (also called the greenslip) is required in all states and territories of Australia. The CTP insurance provides compensation for people injured or killed when the insured vehicle is involved in an accident. The CTP insurance is highly regulated, as it can be regarded as a social safety net or social good, so social considerations are more important in this case, as introduced in Section 2.1 of of Frees and Huang (2020). The pricing factors allowed to be used in CTP insurance varies across different states. For example, the Australian Capital Territory's CTP insurance scheme is a "community rated" scheme, with all motorists for each vehicle class pay the same amount regardless of their individual risk profile. The Victorian CTP insurance scheme allows the use of three factors to determine the premium, which are the vehicle classification (vehicle type and use), postcode, and eligibility for a pensioner discount. The New South Wales' CTP insurance is the least regulated compared with the other states and territories. It allows the use of more factors for pricing, including for example geographic region, type of vehicle, age of vehicle, distance traveled and Vehicle performance and else.

Voluntary Comprehensive Car Insurance and Third Party Insurance is also offered in the Australian auto market. Comprehensive insurance cover damage to the insured vehicle, damage to other vehicles, damage to or loss of property and theft of the insured vehicle. Third party property insurance only covers damage to other vehicles involved in an accident. Unlike CTP insurance, these voluntary coverages are less regulated, as they are not regarded as a social good and economic considerations dominate more in this case. Insurers can set prices using a range of rating factors for risk classifications. Historically, pricing models used by insurers in Australia have been less advanced. However, most large insurers now have highly sophisticated pricing models, see FCA (2019).

	Estimate	Std. Error	z value	$\Pr(> z)$
(Intercept)	-0.409	0.162	-2.526	0.012
VehBody.Hatchback	1.707	0.128	13.334	0.000
VehBody.Sedan	1.354	0.119	11.334	0.000
'VehBody.Station wagon' 'DrivAge.working people' VehBody.Minibus	$\begin{array}{c} 0.950 \\ 0.224 \\ 1.601 \end{array}$	$0.122 \\ 0.077 \\ 0.339$	$7.820 \\ 2.911 \\ 4.721$	$\begin{array}{c} 0.000 \\ 0.004 \\ 0.000 \end{array}$
'DrivAge.oldest people' VehBody.Hardtop VehBody.Coupe	-0.478 0.794 0.863	$\begin{array}{c} 0.117 \\ 0.205 \\ 0.266 \end{array}$	-4.098 3.876 3.250	$\begin{array}{c} 0.000 \\ 0.000 \\ 0.001 \end{array}$
'VehAge.oldest cars' VehValue 'DrivAge.old people'	-0.466 -0.155 -0.213	$0.102 \\ 0.041 \\ 0.094$	-4.559 -3.770 -2.259	$\begin{array}{c} 0.000 \\ 0.000 \\ 0.024 \end{array}$
'VehAge.old cars' VehBody.Convertible	-0.186 2.240	$0.082 \\ 1.268$	-2.262 1.767	$0.024 \\ 0.077$

Table 1: Logistic Regression Model of Being Female Summary

2 Appendices

2.1 Appendix: A Proxy for Being Female

This appendix shows the results of the use of a classical automatic technique, stepwise regression, to develop a desirable proxy for the probability of being female. The R code is in Appendix Section 2.4. In addition to the main variables used for predicting claim amounts, VehValue and DrivAge, it also uses two other variables from the datafile:

- VehAge The vehicle age group, and
- VehBody The vehicle body group.

Estimated Probability of Being Female

2.2 Appendix: Australian Regulations

Section 24 of the DDA has the following provisions relating to disability provision:

- (1) It is unlawful for a person who, whether for payment or not, provides goods or services, or makes facilities available, to discriminate against another person on the ground of the other person's disability or a disability of any of that other person's associates:
- (a) by refusing to provide the other person with those goods or services or to make those facilities available to the other person; or
- (b) in the terms or conditions on which the first-mentioned person provides the other person with those goods or services or makes those facilities available to the other person; or
- (c) in the manner in which the first-mentioned person provides the other person with those goods or services or makes those facilities available to the other person.
- (2) This section does not render it unlawful to discriminate against a person on the ground of the person's disability if the provision of the goods or services, or making facilities available, would impose unjustifiable hardship on the person who provides the goods or services or makes the facilities available.

Section 46 (1) of the DDA has the following provisions relating to insurance exemptions:

- (1) This Part does not render it unlawful for a person to discriminate against another person, on the ground of the other person's disability, by refusing to offer the other person:
- (a) an annuity; or
- (b) a life insurance policy; or
- (c) a policy of insurance against accident or any other policy of insurance; or

- (d) membership of a superannuation or provident fund; or
- (e) membership of a superannuation or provident scheme; if:
- (f) the discrimination:

(i) is based upon actuarial or statistical data on which it is reasonable for the first mentioned person to rely; and

(ii) is reasonable having regard to the matter of the data and other relevant factors; or

(g) in a case where no such actuarial or statistical data is available and cannot reasonably be obtained—the discrimination is reasonable having regard to any other relevant factors.

Data disclosure requirements for the exception of insurance based on sex discrimination are listed below in SDA:

if the client gives the insurer a written request for access to the data—either:

- (i) the insurer gives the client a document containing the data; or
- (ii) the insurer:

(A) makes a document containing the data available for inspection by the client at such time or times, and at such place or places, as are reasonable; and

(B) if the client inspects the document—allows the client to make a copy of, or take extracts from, the document.

2.3 Appendix: Chinese Regulations

We summarize the history of the regulation changes in Chinese voluntary auto insurance market in the table below.

Table 2: The history of regulation changes in Chinese voluntary auto insurance market

Time	Regulation
2001/1	0 First regulation change after becoming a member of WTO. A pilot experiment in Guangzhou to give the pricing rights to insurers, who use factors related to both the vahiele (type, age, etc.) and driver (age, gender, driving age, etc.) for pricing purposes
2003 2006/3	New pricing regulation for the whole country to give the pricing rights to insurers To stop the market chaos, the pricing was again regulated. No more than 30% discount
2015-	of the benchmark pure risk premium can be applied. The CIBC makes marketization of the auto insurance market as the objective again and
2018	gradually relax the the regulation by increasing the pricing bounds.

2.4 R Code

This section provides R Code for the Section 6.3 of Frees and Huang (2020) empirical example and the Appendix Section 2.1.

Read In the Data

```
#install.packages("CASdatasets", repos = "http://cas.uqam.ca/pub/R/", type="source")
library(CASdatasets)
data(ausprivauto0405)
ausprivauto0405$Female <- 1*(ausprivauto0405$Gender=="Female")
ausprivauto0405$DrivAge = relevel(ausprivauto0405$DrivAge, ref="youngest people")
ClaimsData <- subset(ausprivauto0405, ClaimAmount>0)
```

Fit Gamma Regression Model

Plot Distribution of Fits

```
par(mfrow = c(1,2))
plot(density(AmtGamma1$fitted.values, bw=80), xlab = "Fitted Value", main = "")
boxplot(AmtGamma1$fitted.values ~ ClaimsData$Female, ylab="Fitted Value", xlab="Female")
```

Develop the Proxy for Being Female

```
#Proxy For Female
#install.packages("dummies")
library("dummies")
ClaimsData1 <- <pre>subset(ClaimsData, select =
                         -c(ClaimOcc, ClaimNb, Gender, Exposure, ClaimAmount))
ClaimsData2<- dummy.data.frame(ClaimsData1, sep = ".")</pre>
big.mod = glm(Female ~ ., family=binomial(link=logit),data= ClaimsData2)
base.mod <- glm(Female ~ 1 , family=binomial(link=logit),data= ClaimsData2)</pre>
# perform step-wise algorithm
stepMod <- step(base.mod, scope = list(lower = base.mod, upper = big.mod),</pre>
                  direction = "both", trace = 0, steps = 1000)
shortlistedVars <- names(unlist(stepMod[[1]]))</pre>
shortlistedVars <- shortlistedVars[!shortlistedVars %in% "(Intercept)"]</pre>
vars <- gsub("'","",shortlistedVars)</pre>
ClaimsData3<- subset(ClaimsData2, select = c("Female", vars))</pre>
FemLogit1 = glm(Female ~ ., family=binomial(link=logit), data= ClaimsData3)
```

Gamma Regression Summary

```
RemFem <- function(Var) {lm(Var ~ Female, data= ClaimsData) $residual}
VehValueFemale <- RemFem(ClaimsData$VehValue)</pre>
DrivAge1Female <- RemFem(1*(ClaimsData$DrivAge=="old people"))</pre>
DrivAge2Female <- RemFem(1*(ClaimsData$DrivAge=="older work. people"))</pre>
DrivAge3Female <- RemFem(1*(ClaimsData$DrivAge=="oldest people"))</pre>
DrivAge4Female <- RemFem(1*(ClaimsData$DrivAge=="working people"))</pre>
DrivAge5Female <- RemFem(1*(ClaimsData$DrivAge=="young people"))</pre>
DrivAge6Female <- RemFem(1*(ClaimsData$DrivAge=="youngest people"))</pre>
AmtGamma2 = glm(ClaimAmount ~ VehValue+DrivAge
                , family=Gamma(link=log), data= ClaimsData)
AmtGamma1A = glm(ClaimAmount ~ VehValue+ DrivAge1Female+
                    DrivAge2Female+DrivAge3Female+DrivAge4Female+DrivAge5Female+Female
                , family=Gamma(link=log), data= ClaimsData)
AmtGamma3 = glm(ClaimAmount ~
                                 VehValue+ DrivAge1Female+
                   DrivAge2Female+DrivAge3Female+DrivAge4Female+DrivAge5Female
                , family=Gamma(link=log), data= ClaimsData)
AmtGamma4 = glm(ClaimAmount ~ VehValue+ DrivAge+FemLogit1$fitted.values
                , family=Gamma(link=log), data= ClaimsData)
AmtGamma5= glm(ClaimAmount ~ VehValue+ DrivAge1Female+
                 DrivAge2Female+DrivAge3Female+DrivAge4Female+
                 DrivAge5Female+FemLogit1$fitted.values
                , family=Gamma(link=log), data= ClaimsData)
temp1A <- cbind(summary(AmtGamma1)$coefficients[,1],summary(AmtGamma1)$coefficients[,3])</pre>
temp1 <- rbind(temp1A,c(summary(AmtGamma1)$aic,NA))</pre>
colnames(temp1) <- c("M.1 Coef", "M.1 t")</pre>
rownames(temp1) <- c("(Intercept)",</pre>
                      "VehValue", "DrivAge.old people", "DrivAge.older work people",
                      "DrivAge.oldest people", "DrivAge.working people",
                      "DrivAge.young people", "Female", "AIC")
temp2A <- cbind(summary(AmtGamma2)$coefficients[,1],summary(AmtGamma2)$coefficients[,3])</pre>
temp2A <- rbind(temp2A, c(NA,NA))</pre>
temp2 <- rbind(temp2A,c(summary(AmtGamma2)$aic,NA))</pre>
colnames(temp2) <- c("M.2 Coef", "M.2 t")</pre>
temp3A <- cbind(summary(AmtGamma3)$coefficients[,1],summary(AmtGamma3)$coefficients[,3])</pre>
temp3A <- rbind(temp3A, c(NA,NA))</pre>
temp3 <- rbind(temp3A,c(summary(AmtGamma3)$aic,NA))</pre>
colnames(temp3) <- c("M.3 Coef", "M.3 t")</pre>
temp4A <- cbind(summary(AmtGamma4)$coefficients[,1],summary(AmtGamma4)$coefficients[,3])</pre>
temp4 <- rbind(temp4A,c(summary(AmtGamma4)$aic,NA))</pre>
colnames(temp4) <- c("M.4 Coef", "M.4 t")</pre>
temp5A <- cbind(summary(AmtGamma5)$coefficients[,1],summary(AmtGamma5)$coefficients[,3])</pre>
temp5 <- rbind(temp5A,c(summary(AmtGamma5)$aic,NA))</pre>
colnames(temp5) <- c("M.5 Coef", "M.5 t")</pre>
temp <- cbind(temp1,temp2,temp3,temp4,temp5)</pre>
kable_styling(knitr::kable(temp,digits=2, caption="Gamma Regression Model Summary"
                            , align = "cc|cc|cc|cc|cccc"),latex options="scale down")
```

Table by Gender

```
PSFittedF1 <- AmtGamma1$fitted.values*(ClaimsData$Female==1)
PSFittedF2 <- AmtGamma1$fitted.values*(ClaimsData$Female==0)*
                    exp(summary(AmtGamma1)$coefficients["Female",1])
PSFittedF <- PSFittedF1+PSFittedF2 #Fitted values if everyone were female
PSFittedM1 <- AmtGamma1$fitted.values*(ClaimsData$Female==0)</pre>
PSFittedM2 <- AmtGamma1$fitted.values*(ClaimsData$Female==1)*</pre>
                    exp(-summary(AmtGamma1)$coefficients["Female",1])
PSFittedM <- PSFittedM1+PSFittedM2 #Fitted values if everyone were male
PSFitted <- (PSFittedF+PSFittedM)/2
Mod1Fits <- AmtGamma1$fitted.values
SumM1Fits <- sum(AmtGamma1$fitted.values)</pre>
Mod2Fits <- ( AmtGamma2$fitted.values/sum(AmtGamma2$fitted.values) ) * SumM1Fits
Mod3Fits <- ( AmtGamma3$fitted.values/sum(AmtGamma3$fitted.values) ) * SumM1Fits
Mod4Fits <- ( AmtGamma4$fitted.values/sum(AmtGamma4$fitted.values) ) * SumM1Fits
Mod5Fits <- ( AmtGamma5$fitted.values/sum(AmtGamma5$fitted.values) ) * SumM1Fits
Mod6Fits <- ( PSFitted/sum(PSFitted) ) * SumM1Fits</pre>
library(Hmisc)
temp1q<- summarize(Mod1Fits,ClaimsData$Female, mean)[,2]</pre>
temp2q<- summarize(Mod2Fits,ClaimsData$Female, mean)[,2]</pre>
temp3q<- summarize(Mod3Fits,ClaimsData$Female, mean)[,2]</pre>
temp4q<- summarize(Mod4Fits,ClaimsData$Female, mean)[,2]</pre>
temp5q<- summarize(Mod5Fits,ClaimsData$Female, mean)[,2]</pre>
temp6q<- summarize(Mod6Fits,ClaimsData$Female, mean)[,2]</pre>
tempq <- cbind(temp1q,temp2q,temp3q,temp4q,temp5q,temp6q)</pre>
colnames(tempq) <- c("Model 1", "Model 2", "Model 3", "Model 4", "Model 5", "Model 6")</pre>
rownames(tempq) <- c("Male", "Female")</pre>
kable_styling(knitr::kable(tempq,digits=2,
             caption="Comparison of Means by Predictors and Gender",
             align = "ccccccc|"), font_size=10)
```

Plot by Gender

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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 disasterprone 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 <u>Federal Employee Compensation Act (FECA)</u> 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 **<u>Black Lung Benefits Act</u>** (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

<u>Background</u>

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.

New Reporting Requirements since 2007

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 noncompliance 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 propertycasualty 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 setasides 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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Introduction

This example illustrates the requirements in IFRS 17 Insurance Contracts:

- a) applied to a group of underlying insurance contracts; and
- b) applied to a group of reinsurance contracts held that provides proportionate coverage for that group of underlying insurance contracts

This example demonstrates that:

- the measurement of a group of reinsurance contracts held is consistent with the measurement of any underlying insurance contracts
- the timing of cash flows do not directly affect the recognition of reinsurance income or expenses



Paragraphs 60-70 of IFRS 17 *Insurance Contracts* Paragraphs BC296-BC315 of the Basis for Conclusions on IFRS 17 *Insurance Contracts* Webcast *Reinsurance contracts held* available at: go.ifrs.org/IFRS-17-implementation

Assumptions

- IFRS 17 general model (not PAA)
- Risk adjustment for non-financial risk is nil
- Discount rate 0%
- Services are provided by the insurer evenly over the contract term for each contract
- All events occur as expected at initial recognition

Further information

The objective of this example is to demonstrate the mechanics of the IFRS 17 requirements for reinsurance contracts held. For simplicity, a number of assumptions have been made. This example is not intended to reflect a real fact pattern.

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¹ Contract A is issued on 1 January in year 1

² Contract B is issued on 30 June in year 1

³ Contract C is issued on 31 December in year 1

⁴ Initial recognition of the group of insurance contracts: 1 January in year 1 is the beginning of the coverage period of the group of insurance contracts (paragraph 25(a) of IFRS 17). The coverage period for the group of insurance contracts is from 1 January in year 1 to 30 December in year 2. For simplicity, in this example the coverage period is referred as 2 years.

		Year 1			Year 2		
	1 Jan	30 June	31 Dec	30 June	31 Dec	ΙΟιαί	
Premiums ¹	300	300	300	-	-	900	
Claims ²	-	(100)	(200)	(200)	(100)	(600)	
Net cash inflow						300	

All events occur as expected at initial recognition.

¹ Premiums of 300 are expected on day 1 for each of the 3 underlying insurance contracts.

² Claims of 600 are expected for the group of insurance contracts. Claims are incurred equally by each of the 3 underlying insurance contracts. For each underlying insurance contract, claims occur evenly over the 1 year contract term as services are provided and are paid immediately after incurred. The claims cash flows at each reporting date can be analysed as:

- Year 1 30 June Contract A 100
- Year 1 31 December Contract A 100 + Contract B 100
- Year 2 30 June Contract B 100 + Contract C 100
- Year 2 31 December Contract C 100

Statement of financial position

	Year 1			Year 2		
	1 Jan ¹	30 June ²	31 Dec ³	30 June ⁴	31 Dec⁵	
Fulfilment cash flows	(200)	(300)	(300)	(100)	-	
Contractual service margin	(100)	(150)	(150)	(50)	-	
Insurance contract asset / (liability)	(300)	(450)	(450)	(150)	-	



¹ At 1 January in year 1 the group is recognised and consists of the cash flows for Contract A only.

- FCF: premiums of 300 for Contract A are received on 1 January. The fulfilment cash flows at this date reflect expected claims of 200.
- CSM: the CSM of 100 at initial recognition is the amount that results in no income or expenses arising from the initial recognition of the fulfilment cash flows of 200 and the premiums received on that date of 300.

² At 30 June in year 1 the cash flows for Contract B are added to the group.

- FCF: premiums of 300 for Contract B are received on 30 June. The fulfilment cash flows reflect expected claims of 300 (opening balance of 200 plus 200 expected claims for Contract B minus 100 claims paid in the period).
- CSM: the balance of the CSM is 150 (opening balance of 100 plus 100 for Contract B minus 50 recognised as revenue in the period (see profit or loss slide 9)).

³ At 31 December in year 1 the cash flows for Contract C are added to the group.

- FCF: premiums of 300 for Contract C are received on 31 December. The fulfilment cash flows reflect expected claims of 300 (opening balance of 300 plus 200 expected claims for Contract C minus 200 claims paid in the period).
- CSM: the balance of the CSM is 150 (opening balance of 150 plus 100 for Contract C minus 100 recognised as revenue in the period).

⁴ At 30 June in year 2 no new cash flows are added to the group.

- FCF: the fulfilment cash flows reflect expected claims of 100 (opening balance of 300 minus 200 claims paid in the period).
- CSM: the balance of the CSM is 50 (opening balance of 150 minus 100 recognised as revenue in the period).

⁵ At 31 December in year 2 the group is derecognised.

- FCF: the fulfilment cash flows reflect expected claims of 0 (opening balance of 100 minus 100 claims paid in the period).
- CSM: the balance of the CSM is 0 (opening balance of 50 minus 50 recognised as revenue in the period).

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Statement of profit or loss

	Year 1		Yea	ur 2
	1Jan-30Jun	1Jul-31Dec	1Jan-30Jun	1Jul-31Dec
Expected claims incurred ¹	100	200	200	100
Contractual service margin	50 ²	100	100	50
Insurance revenue	150	300	300	150
Actual claims incurred ¹	(100)	(200)	(200)	(100)
Insurance service expenses	(100)	(200)	(200)	(100)
Insurance service result	50	100	100	50



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Further information

¹ In this example, for each underlying insurance contract, claims are incurred evenly over the 1 year contract term as services are provided and are paid immediately when incurred. All events occur as expected. See cash flows slide 7.

² At 30 June in year 1, the CSM before recognising any amount in profit or loss is 200. The CSM recognised for the period of six months ending 30 June in year 1 is 50. 50 reflects the amount allocated to coverage provided in the period (contract 1 was in force for six months) while the remaining 150 reflects coverage expected to be provided in the future (contract 1 is expected to be in-force for six months and contract 2 expected to be in force for a year). The CSM recognised in the remaining periods is determined in the same way.

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¹ The reinsurance contract held is recognised on 1 January in year 1. In this example the reinsurance contract held, as a single contract, is identified as a group of insurance contracts. In this example, the group is referred to as the reinsurance contract held.

² Initial recognition of reinsurance contract held: 1 January in year 1 is the beginning of the coverage period for the reinsurance contract held and is also the initial recognition of the first underlying insurance contract added to the group (paragraph 62(a) of IFRS 17). The coverage period for the reinsurance contract held is equal to the coverage period for the group of underlying insurance contracts, from 1 January in year 1 to 30 December in year 2. For simplicity, in this example the coverage period is referred as 2 years.

	Year 1			Yea	Tedal	
	1 Jan	30 June	31 Dec	30 June	31 Dec	TOLAI
Premiums ¹	(300)	(300)	(300)	-	-	(900)
Claims ²	-	100	200	200	100	600
Net cash outflow						

¹ Premiums expected to be paid to the reinsurer are equal to the premiums received from the policyholder on the underlying insurance contracts. Premiums are expected to be paid to the reinsurer on the same day that premiums are received from the policyholder.

² Claims expected to be received from the reinsurer are equal to the claims expected to be paid to the policyholder on the underlying insurance contracts. Claims are expected to be received from the reinsurer on the same day that claims are paid to the policyholder.

See slide 7 for the cash flows arising from the group of underlying insurance contracts.

	Year 1			Year 2	
	1 Jan ³	30 June⁴	31 Dec⁵	30 June ⁶	31 Dec ⁷
Fulfilment cash flows ¹	0	200	300	100	
Contractual service margin ²	300	250	150	50	
Reinsurance contract asset / liability)	300	450	450	150	

¹The fulfilment cash flows of the reinsurance contract held reflect all future cash flows expected to arise within the boundary of the reinsurance contract held. In this example, those cash flows relate to all underlying insurance contracts expected to be covered by the reinsurance contract including underlying insurance contracts that have not been issued yet.

² The CSM for the reinsurance contract held represents the net cost of purchasing reinsurance.

³ At 1 January in year 1 the reinsurance contract held is recognised.

- FCF: the fulfilment cash flows are 0 (opening balance of 0 plus 900 expected premiums minus 600 expected claims minus 300 premiums paid relating to Contract A).
- CSM: the CSM of 300 at initial recognition is the amount that results in no income or expenses arising from the initial recognition of the fulfilment cash flows of 0 and the premiums paid on that date of 300.

⁴ At 30 June in year 1:

- FCF: the fulfilment cash flows are 200 (opening balance of 0 minus 100 claims received plus 300 premiums paid relating to Contract B).
- CSM: the balance of the CSM is 250 (opening balance of 300 minus 50 recognised as reinsurance contract expenses in the period (see profit or loss slide 14)).

⁵ At 31 December in year 1:

- FCF: the fulfilment cash flows are 300 (opening balance of 200 minus 200 claims received plus 300 premiums paid relating to Contract C).
- CSM: the balance of the CSM is 150 (opening balance of 250 minus 100 recognised as reinsurance contract expenses in the period).

⁶ At 30 June in year 2:

- FCF: the fulfilment cash flows are 100 (opening balance of 300 minus 200 claims received)
- CSM: the balance of the CSM is 50 (opening balance of 150 minus 100 recognised as reinsurance contract expenses in the period).

⁷ At 31 December in year 2 the reinsurance contract held is derecognised.

- FCF: the fulfilment cash flows are 0(opening balance of 100 minus 100 claims received).
- CSM: the balance of the CSM is 0 (opening balance of 50 minus 50 recognised as reinsurance contract expenses in the period).

Statement of profit or loss

	Year 1		Year 2	
	1Jan -30Jun	1Jul-31Dec	1Jan-30Jun	1Jul-31Dec
Reinsurance premiums ¹ :				
Expected claims recovered ²	(100)	(200)	(200)	(100)
Contractual service margin ³	(50)	(100)	(100)	(50)
Amounts recovered from reinsurance ²	100	200	200	100
Net expense from reinsurance contracts	(50)	(100)	(100)	(50)

Further information

¹ The breakdown of the reinsurance premiums amount is given in the slide to explain the results in this example. Applying IFRS 17, revenue does not arise from reinsurance contracts held. Accordingly, the requirements for revenue, including the related disclosures, do not apply.

² In this example, claims received from the reinsurer are equal to the claims paid to the policyholder on the underlying insurance contracts. Claims are received from the reinsurer on the same day that those claims are paid to the policyholder. All events occur as expected. See expected cash flows - slide 12.

³ To determine the amount of the contractual service margin to be recognised in profit or loss in the period for the reinsurance contract held, in this example, the insurer considers the relevant facts and circumstances related to the underlying insurance contracts and determines that the amount and timing of services received under the reinsurance contract held are consistent to the amount and timing of services provided under the underlying insurance contracts (see slide 9).

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Statement of financial position:

the whole picture

	Year 1			Year 2		
	1 Jan	30 June	31 Dec	30 June	31 Dec	
Fulfilment cash flows	(200)	(300)	(300)	(100)	-	
Contractual service margin	(100)	(150)	(150)	(50)	-	
Insurance contract asset / (liability)	(300)	(450)	(450)	(150)	-	
Fulfilment cash flows	0	200	300	100	-	
Contractual service margin	300	250	150	50	-	
Reinsurance contract asset / (liability)	300	450	450	150	-	

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Further information

FCF: in this example, the cash flows for the reinsurance contract held are equal to the cash flows for the group of underlying insurance contracts and they occur at the exact same time.

CSM: in this example, the insurer provides service equally over the contract term for each underlying insurance contract. In this example, the insurer determines that the amount and timing of services received under the reinsurance contract held are equal to the amount and timing of services provided under the underlying insurance contracts.

As a result of the above, the balance of the reinsurance contract asset is equal to the balance of the insurance contract liability.

Statement of profit or loss the whole picture

	Year 1 Year		ar 2	
	1Jan -30Jun	1Jul-31Dec	1Jan-30Jun	1Jul-31Dec
Insurance revenue	150	300	300	150
Insurance service expenses	(100)	(200)	(200)	(100)
Net expense from reinsurance contracts	(50)	(100)	(100)	(50)
Insurance service result	-	-	-	-



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Further information

This is a simplified example of 100% proportionate reinsurance coverage. In this example, the services provided by the insurer under the underlying insurance contracts in each period are consistent with the services received from the reinsurer under the reinsurance contract held in each period. Also, the consideration to which the insurer expects to be entitled to in exchange for the services provided under the underlying insurance contracts is equal to the consideration the insurer expects to pay to the reinsurer in exchange for the services received under the reinsurance contract held.

As a result, there is a nil impact on the statement of profit or loss.



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Cash flows

Same fact pattern, expect that all reinsurance contract cash flows are settled net at the end of the coverage period

	Year 1			Yea	Total	
	1 Jan	30 June	31 Dec	30 June	31 Dec	Iotai
Premiums	-	-	-	-	(900)	(900)
Claims	-	-	-	-	600	600
Net cash outflow						
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Further information

A net amount of 300 is expected to be paid to the reinsurer at the end of the coverage period (900 premiums minus 600 claims).

	Year 1			Year 2	
	1 Jan	30 June	31 Dec	30 June	31 Dec
Fulfilment cash flows ¹	(300)	(300)	(300)	(300)	
Contractual service margin ²	300	250	150	50	
Reinsurance contract asset / (liability) ³	-	(50)	(150)	(250)	

¹ The fulfilment cash flows at each reporting date is 300 until the end of the coverage period. This reflects that the insurer expects to make one payment of 300 to the reinsurer at the end of the coverage period.

² The contractual service margin is measured and recognised in the same way as in the previous example (see slides 13–14) because the services provided under the reinsurance contract held are the same. The only difference in this example is the timing of the cash flows.

³ In this example, the balance is a reinsurance contract liability because the expected future cash flows are a net outflow.

Statement of profit or loss

	Year 1		Year 2	
	1Jan -30Jun	1Jul-31Dec	1Jan-30Jun	1Jul-31Dec
Reinsurance premiums:				
Expected claims recovered	(100)	(200)	(200)	(100)
Contractual service margin	(50)	(100)	(100)	(50)
Amounts recovered from reinsurance	100	200	200	100
Net reinsurance contract expenses	(50)	(100)	(100)	(50)

Further information

The statement of profit or loss in this example is the same as the statement of profit or loss in the previous example (see slides 13–14) because the services provided under the reinsurance contract held are the same. The only difference in this example is the timing of the cash flows. The timing of cash flows may impact insurance finance income or expenses however, for simplicity in this example, the discount rate is 0%.

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Statement of financial position:

the whole picture

	Year 1			Year 2	
	1 Jan	30 June	31 Dec	30 June	31 Dec
Fulfilment cash flows	(200)	(300)	(300)	(100)	
Contractual service margin	(100)	(150)	(150)	(50)	
Insurance contract asset / (liability)	(300)	(450)	(450)	(150)	
Fulfilment cash flows	(300)	(300)	(300)	(300)	
Contractual service margin	300	250	150	50	
Reinsurance contract asset / (liability)	-	(50)	(150)	(250)	

Further information

FCF: in this example, the cash flows for the reinsurance contract held are equal to the cash flows for the group of underlying insurance contracts, however the cash flows occur at different times.

CSM: as with the previous example, the insurer provides service equally over the contract term for each underlying insurance contract. Also in this example, the insurer determines that the amount and timing of services received under the reinsurance contract held are equal to the amount and timing of services provided under the underlying insurance contracts.

As a result of the above, the balance of the reinsurance contract liability is not equal to the balance of the insurance contract liability. This reflects the fact that, at each reporting period, the expected future cash flows under the reinsurance contract held are different to the expected future cash flows under the group of underlying insurance contracts.

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Statement of profit or loss the whole picture

	Year 1		Year 2	
	1Jan -30Jun	1Jul-31Dec	1Jan-30Jun	1Jul-31Dec
Insurance revenue	150	300	300	150
Insurance service expenses	(100)	(200)	(200)	(100)
Net expense from reinsurance contracts	(50)	(100)	(100)	(50)
Insurance service result	-	-	-	-

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Further information See slide 16.

In practice

- In practice it is likely that there will be differences between the cash flows arising from:
 - a) the rights and obligations of the underlying insurance contracts; and
 - b) the rights and obligations of the reinsurance contract held.
- These differences may exist, for example, because:
 - a) the timing of cash flows can vary, which can also impact insurance finance income or expenses; or
 - b) the reinsurer prices the reinsurance contract differently to the pricing of the underlying contracts.



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1. Introduction

Professionalism for the actuarial profession means:

- the application of specialist actuarial knowledge and expertise;
- the demonstration of ethical behaviour, especially in doing actuarial work; and
- the actuary's accountability to a professional actuarial association or similar professional oversight organisation on the basis of a code of conduct.

The distinguishing feature of a profession that sets it apart from a trade, a craft, a guild or a syndicate is the overriding interest of the individual professional in the public well-being.¹

This definition of professionalism is derived from the following high-level principles of professionalism, which are discussed in detail in this report:

- A. Knowledge and expertise
- B. Values and behaviour
- C. Professional accountability

These principles are discussed below.

2. Principle A: Knowledge and Expertise

"An actuary shall perform professional services only if competent and appropriately experienced to do so"².

This principle of Knowledge and Expertise is supported by the following elements:

- Specialist knowledge
- Professional communication
- Required education
- Continuing professional development

2.1. Specialist knowledge

The existence of a distinct actuarial profession globally is a result of actuaries' specialist knowledge and expertise.

An actuary's clients may include governments, community organizations, funds, industries, businesses and individuals.

¹ Source: Estey, W. (1989) The Challenge of Professionalism. Keynote address at the Centenary Celebrations of the Actuarial Profession in North America, June 1989, Washington D.C.

² Source: IAA Internal Regulations 2.2.2 (a) (iv)

Actuaries are equipped to help their clients make informed choices and develop efficient solutions to safeguard their future in an ever-changing world.

Actuaries provide realistic, innovative and numerate solutions to complex financial and other measurable problems, sometimes over long time horizons and for uncertain events, using a control process to monitor and refine solutions over time.

Actuaries are experts in modelling complex future events, often developing models from first principles, and are experts in understanding and analysing data. Uses of models include sensitivity analysis and scenario testing in order to communicate the model dynamics and the implications of the model results.

Actuaries apply this skill set within a professional environment which ensures, through adherence to the principles of professionalism, the delivery of competent work, professional ethics, life-long learning and professional standards and discipline. This allows actuaries to make an important contribution to public debate in matters affecting the interests of the public.

2.2. Professional communication

Effective and appropriate communication is an essential part of all actuarial work. Communication needs to be clear and appropriate to the circumstances and the intended audience, and to satisfy whatever applicable standards of practice exist and apply to the individual actuary's situation. Appropriate communication includes the ability of the actuary to:

- Document the work done.
- Communicate the basis and the outcome of the work to other actuaries.
- Communicate with others who contribute to the work with courtesy and respect.
- Communicate the assumptions, outcome and implications of actuarial work to the actuary's superior or client.
- Prepare material for presentation.

Actuarial work requires an awareness of the business context to both determine the correct response and effectively communicate results. An actuary therefore needs to ensure that the advice given is communicated effectively, so as to avoid misunderstanding by clients who may not have relevant skills or knowledge.

One of the most important factors in developing and improving communication skills is education. Options that an FMA may consider for furthering communication skills of their member actuaries include offering professionalism courses and continuing professional development focusing specifically on communication skills.

2.3. Required education

Actuaries have a large and specialist skill set, breadth of knowledge, and training.

The IAA, in its Internal Regulations for membership requirements for Full Member Associations (FMA), sets out criteria that include an education syllabus, code of professional conduct, formal discipline process and governing documents of the FMA.

2.4. Continuing Professional Development

Actuaries need to maintain their knowledge, expertise and skills. Actuaries can work in a variety of areas and need to be competent in their chosen area(s) before providing advice. Over time there could also be changes in techniques, regulations, professional standards and codes of professional conduct with which actuaries need to keep up to date.

Continuing Professional Development (CPD) could include analysis of case studies, general topics on ethics and analysis of current problems, so as to enhance the actuary's understanding of current technical and professional issues.

Lessons can also be learned from the interaction with other professions, knowing their codes of conduct, exchanging points of view, as well as having joint sessions analysing current business or society issues. This issue is important because the professional actuary will often operate in multi-disciplinary teams.

FMAs are encouraged to adopt a CPD strategy.³ CPD may be supported by a compliance program administered by the actuary's membership association.

3. Principle B: Values and Behaviour

"An actuary shall perform professional services with integrity, skill and care. An actuary shall act in a manner that fulfils the profession's responsibility to the public. An actuary shall act in a manner that upholds the reputation of the actuarial profession."⁴

This principle of Values and Behaviour is supported by the following elements:

- Ethical behaviour
- Integrity
- Independent advice
- Trust and reputation
- Responsibility to the public

3.1. Ethical behaviour

Full Members of the IAA must have a code of professional conduct consistent with the principles in the Internal Regulations. The definition of professionalism should explicitly incorporate a reference to ethical behaviour.

For example "A member shall act honestly, with integrity and competence, and in a manner to fulfil the profession's responsibility to the public and to uphold the reputation of the actuarial profession"⁵.

Differences of views among FMAs on what constitutes ethical behavior can be accommodated. For example, in some areas individuals are encouraged to expose improper activity ("whistle-blowing"), while in other areas issues are resolved by indirect means.

3.2. Integrity

The foundation of good behaviour is integrity. Consequently, the list of IAA requirements in regulation 2.2.2 (a)(i) begins:

An actuary shall perform professional services with integrity, skill and care

Many associations give prominence to integrity in their codes of conduct.

Other professions also describe integrity as the cornerstone of professional ethical behaviour. The IAA Professionalism Committee supports these views.

³ Source: IAA Guidelines on Continuing Professional Development (CPD), esp. chapter 2.3

⁴ Source: IAA Internal Regulations 2.2.2 (a)(i) and (ii)

⁵ This definition is used by the Canadian Institute of Actuaries. Definitions of other associations can be referenced on the IAA Professionalism Committee Resources page. See <u>Professionalism Committee Resources</u>.

3.3. Independent advice

An important aspect of professionalism and ethical behaviour is the ability of the actuary, whether employed or not, to express an independent opinion or provide unbiased independent advice, where the circumstances require this. The former Groupe Consultatif, now Actuarial Association of Europe (AAE), produced a discussion paper in 2010 on the topic of operational independence in the context of the actuarial function under Solvency II. This made a number of important points about independence– here understood as freedom from undue influence:

"... independence ... might be described as the ability to analyse and to make relevant decisions ... without being unduly or inappropriately controlled, constrained or influenced by the management or Board (or Boards) of the company or by any other function.

... independence is compromised if there is any form of pressure on the persons carrying out the actuarial function to make a particular decision on the data, methods, assumptions or results of their work.

... independence ... involves the exercise of professional judgment, based on education, experience and ethical standards, and the ability to analyse all relevant aspects of the situation in an impartial way to come to an independent conclusion.

... independence is also enhanced through transparency and disclosure of summarised data and results, including reporting on the methodologies adopted, the assumptions used and the thought processes by which they were arrived at.

... independence involves the person in question taking personal responsibility and should be demonstrated by personally signing a report which certifies what has been done.

Impartiality and independence are enhanced by a requirement to adhere to professional standards, including ethical and governance standards. Typically ethical standards might include specific requirements to:

- Ensure competence in relation to the task in question;
- Perform the function with integrity skill and care; and

Carry out the role with impartiality."6

3.4. Trust and reputation

The Codes of Conduct which underpin the professionalism of member associations are primarily designed to create and maintain trust in the work of actuaries among the users of actuarial advice. Trust and reputation are qualities that take many years to build up but can be destroyed very quickly, even by the actions of a single individual.

To this end, many Codes require the actuary not to do anything that might harm the reputation of the actuarial profession or his or her association. Some Codes also encourage the actuary to strive to enhance the profession's reputation at all times. Such Code provisions create individual responsibility to the profession to which an actuary belongs.

3.5. Responsibility to the public

The essential element that sets a profession apart from a trade, craft or guild is the overriding interest of the professional in protection of the public from unsound practices, whether or not that comes into conflict with the immediate objective of earning his or her living. Professionals owe their status and recognition in society to the trust that the public places in them.

Individual actuaries fulfill their responsibility to the public and to the profession by upholding the values and standards of the profession, fulfilling statutory roles, avoiding conduct which

⁶ Source: "Independence – A Discussion Paper", see Professionalism Committee Resources - Principles of Professionalism

could bring the profession into disrepute and supporting the professional organization that provides public interface with the profession in the actuary's jurisdiction.

The IAA membership Regulations require provisions in members' Code of Conduct to be consistent with the principle that

"An actuary shall act in a manner that fulfils the profession's responsibility to the public".

They also state that "The Full Member [Association] may provide more specific guidance if it wishes to do so (for example, it may indicate that an actuary could consider advising a client or employer where a proposed course of action would, in the opinion of the actuary, be contrary to the public interest⁷⁷.

Provided an actuary meets the requirements of law as well as his or her actuarial association's code of professional conduct and applicable professional standards, then the actuary will be considered to have met his or her responsibility to the profession and to public.

4. Principle C: Professional Accountability

Actuaries have professional responsibility to clients and/or employers⁸, the public and to their Full Member Association. In particular,

"An actuary is responsible for ensuring that the actuary's work conforms to applicable practice standards in the actuary's area of work. An actuary must take into account relevant mandatory practice-related guidance issued or endorsed by the actuary's association, and may take into account any non-mandatory practice-related information that is so issued or endorsed."⁹

The Full Member Association holds the individual actuary accountable in so far as the actuary is subject to the FMA's disciplinary process.

This principle of Professional Accountability is supported by the following elements:

- Entry and qualification standards
- Code of Conduct / Standards of practice
- Disciplinary process

4.1. Entry and qualification standards

Each Full Member Association has its own requirements to admit members and to determine who among them is qualified to do what kind of actuarial work. The detailed requirements vary from country to country. The IAA Education Syllabus as well as the IAA Education Guidelines provide additional background as stipulated in the IAA Internal Regulation 2.2.2 (d).

The admission of members to an FMA will in all cases be under the control and authority of the FMA, based on the FMA's requirements. This may include passing exams established by the FMA, as well as being subject to professional requirements established by the FMA or another regulatory body. Some FMAs will also require completion of work-based skills. The FMA's applicable code of professional conduct must be made available to the actuaries who are members of the FMA.¹⁰

Note that the IAA Education Guidelines do not prescribe either the education process or the assessment methods.

Also note paragraph 2.4 on Continuing Professional Development.

⁷ Source: IAA Internal Regulations, 2.2.2 (a) (i) and (ii)

⁸ Source: IAA Internal Regulations, 2.2.2 (a) (i)

⁹ Source: IAA Internal Regulations, 2.2.2 (a) (v)

¹⁰ Source: IAA Internal Regulations, 2.2.2 (a)

4.2. Code of Conduct / Standards of practice

Professional organizations must have adopted rules that govern the conduct of their members as they undertake the specialized work for which they have been, and continue to be, trained.¹¹ To this end, the IAA requires its Full Member Associations' Codes of Conduct to be consistent with, the professional principles as set out in IAA Internal Regulation 2.2.2 (a). These principles cover:

- i. integrity
- ii. public interest
- iii. confidentiality
- iv. qualification and competence
- v. conformity with professional standards
- vi. taking responsibility
- vii. disclosure
- viii. conflict of interest
- ix. consultation with previous actuary
- x. disclosure of related remuneration
- xi. subjection to disciplinary procedures.

IAA member associations may incorporate additional requirements in their codes of conduct as long as these do not lower any of the obligations enumerated in Section 2.2.2(a) of the Internal Regulations.

All members of the actuarial association are required to adhere to their Code of Conduct and failure to do so must be considered a matter for disciplinary consideration. To aid members in their adherence to the Code of Conduct, it must be made readily available to all members of the association and members are to be encouraged to review it from time to time.¹²

The Code of Conduct will also require members to comply with the applicable practice standards. The actuary must take into account relevant mandatory practice-related guidance issued or endorsed by the actuary's association, and may take into account any non-mandatory practice-related information that is so issued or endorsed.¹³

4.3. Disciplinary process

To ensure FMAs are serious about their Code of Conduct and members' adherence, FMA must have a formal process of professional discipline for transgressions of the Code. The discipline process must be applied, and be seen to be applied, equably.¹⁴

The IAA has adopted a short list of criteria to which the discipline processes of Full Member Associations must conform, as specified in IAA Internal Regulation 2.2.2 (b). These are:

"The Full Member must have a formal discipline process in place, including the following:

- *i.* There is a complaint process accessible to anyone affected by an actuary's work and the actuary's professional peers.
- *ii.* There is due process of defense available to the actuary complained against, and the actuary's rights are fully respected.
- iii. There is an objective formal appeal process independent of the body that has ruled at the

¹¹ Source: IAA Internal Regulations, 2.2.2 (a)(iv)

¹² Source: IAA Internal Regulations, 2.2.2 (a), esp. (a)(xi)

¹³ Source: IAA Internal Regulations, 2.2.2 (a)(v)

¹⁴ Source: IAA Internal Regulation 2.2.2 (b)
prior level.

- *iv.* There are available sanctions appropriate to the seriousness of the violations committed, including termination of membership in the association.
- v. The process shall enable the association to give appropriate notice and information to the public of the results of the complaint process where any penalty is imposed, including providing information to other actuarial associations. Any notice to the public shall be consistent with the discipline process."

5. Adoption

This document is the result of a formal review of the "Principles of Professionalism" by the Professionalism Committee of the IAA.¹⁵ The original version was formally adopted by Council on 23 January 2012, after consultation with the IAA's FMAs.

The document has been approved by the IAA Executive Committee on 2 August 2017 and ratified by IAA Council on 7 October 2017 as non-binding guidance to aid member associations in their development and maintenance of Professionalism standards.

¹⁵ Following the "IAA Framework for the production of Professionalism Guidelines"



PG2 - Principles in relation to the Governance of International Actuarial Work

This paper has been prepared by the IAA Professionalism Committee for information to assist Member Associations in this increasingly important area. It is not a model standard, nor is any change to associations' codes of conduct expected at the time of writing. This paper may also be of interest to individual actuaries undertaking International Actuarial Work.

1. Definition of "International Actuarial Work"

- 1.1 International Actuarial Work is defined as work that is under the jurisdiction or regulation of one country, but is carried out by an actuary whose principal jurisdiction of practice or the jurisdiction of their professional membership is in a different country.
- 1.2 The "governance" of International Actuarial Work refers to the regulation and supervision of the actuary's conduct and work by member associations of the International Actuarial Association (IAA).
- 1.3 International Actuarial Work is broadly therefore actuarial work in relation to which the law/ standards/regulatory frameworks of more than one country are relevant and material. More specifically, it is taken to include 'actuarial work'¹ in relation to which the legal/ regulatory requirements of more than one legal jurisdiction or IAA member association² are relevant and material.
- 1.4 The following are a set of principles that might be applied by IAA member associations, with a view to avoiding or addressing the potential for inconsistency, duplication or gaps in relation to the governance of International Actuarial Work.

2. Proposed Principles

2.1 Qualification, Codes and Standards

2.1.1 Adherence to Codes of Conduct helps to ensure that actuaries are competent to undertake work for which they are responsible, and have an appropriate understanding of relevant legal and regulatory requirements applicable to them and to that work.

¹ 'Actuarial work' is assumed in this context to be defined broadly, to include any work done by members of IAA associations in their capacity as actuaries, including work done for the purposes of providing 'Actuarial Services', as defined in ISAP 1.

² It is recognized that the regulatory jurisdiction of IAA member associations will usually arise from membership, and may not necessarily or primarily depend upon geographic/ territorial considerations. Equally, it is recognized that in certain geographic territories there may be more than one IAA body which has jurisdiction. It is envisaged that the principles set out in this paper might, according to the circumstances, also be relevant in that context i.e. where there is more than one relevant legal or regulatory framework operating within a single geographic area or territory.

- 2.1.2 Except to the extent that they are inconsistent with relevant mandatory legal or regulatory requirements, actuaries therefore apply the code and standards and satisfy the educational and qualification standards³ and requirements, where applicable, of each of the full IAA member bodies of which they are a member. Where appropriate, actuaries also follow any applicable local qualification standards and standards of practice.
- 2.1.3 Where there is material inconsistency between the codes, qualification standards and/or practice standards which an actuary would otherwise be required to apply to a piece of work, or between those standards and others which are more relevant to the work in question, reasonable judgment is exercised by the actuary in determining which code, qualification standards and practice standards to apply, and the extent to which they apply, having regard to all of the relevant circumstances, including the following considerations:-
- 2.1.3.1 The context in which, and purpose for which, the work is being provided;
- 2.1.3.2 Relevant market expectations and norms in the context in question; and
- 2.1.3.3 The need to safeguard the interests of the client and of the public in relation to the work in question.
- 2.1.4 It may be appropriate for actuaries to advise and/or justify to their clients as to the code and standards that have been applied to their work.
- 2.1.5 Associations are encouraged to include consideration of international and cross-border practice in the development and maintenance of their code, qualification standards and (where applicable) standards of practice. Ideally this is done so as to reduce or avoid situations of direct conflict with applicable codes and standards applied to their members and the members of other IAA associations.

2.2 Continuing Professional Development (CPD)

- 2.2.1 Many actuarial organizations or other actuarial authorities include a requirement for continuing professional development in their requirements for membership or in their qualification standards. These requirements may range from highly prescriptive requirements with numerous rules, to general principle-based requirements.
- 2.2.2 In general, compliance is expected with the CPD regimes of every full IAA member association of which the actuary is a member. The actuary may also be required to fulfill an organization's CPD requirement in order to fully meet a local qualification standard. This may create difficulties to the extent CPD undertaken to fulfill one organization's requirement cannot be used to help fulfill another organization's CPD requirement.
- 2.2.3 Associations are therefore encouraged where appropriate to recognize CPD undertaken in fulfilment of the requirements of another full IAA member association and to recognize compliance with the CPD regime of that other association as fulfilling their own requirements, including any such requirement incorporated into qualification standards. This suggestion is not meant to imply that an association should lower the level of acceptable actuarial practice.
- 2.2.4 Where possible and appropriate, member associations are encouraged to avoid duplicative requirements, either in relation to the undertaking of the substantive CPD itself, or in relation to the compliance burden associated with the regulation of CPD.

³ By 'qualification standards' we mean the standards or requirements, imposed by a body of appropriate authority, which actuaries are required to satisfy in order to be considered qualified to perform the work in question. These may include initial educational requirements required to obtain sufficient knowledge to practice (broadly or in a particular practice area), CPD requirements and/or experience requirements. In some jurisdictions these may include, for example, practising certificates.

2.3 Disciplinary Investigation and Enforcement

- 2.3.1 Actuaries are subject to the professional disciplinary jurisdiction of those IAA member association(s) of which they are a member. Each association retains its jurisdiction to deal with disciplinary matters in relation to its members.
- 2.3.2 Member associations are however encouraged to take appropriate steps in order to facilitate the sharing of relevant information with other IAA associations in relation to disciplinary proceedings, and to cooperate where appropriate in relation to the disciplinary investigations and/or proceedings of other member associations. Sharing of information should take into account any relevant laws, regulations and court rulings in respect of the entitlement of members and third parties (including actuarial clients) to privacy, confidentiality and/ or data protection.
- 2.3.3 Member associations might in particular, while mindful of the overriding importance of procedural fairness, seek to coordinate their disciplinary arrangements in a number of ways:
- 2.3.3.1 They might put in place a formal cross-border discipline arrangement with another association or associations. This envisages in effect that one association (Association 1) assumes, in specific circumstances, some defined formal (legal) responsibility for undertaking investigations as to violation of actuarial standards in its relevant jurisdiction and/ or disciplinary proceedings in relation to the members of another association (Association 2). (For example, and most obviously, where the proceedings relate to the conduct of the member of Association 2, whilst practising in the geographic jurisdiction associated with Association 1). A version of this approach is currently adopted, for example, by the North American actuarial associations⁴.
- 2.3.3.2 A similar, but less formal, arrangement would not involve the conferral of actual legal jurisdiction on Association 1. Instead, Associations 1 and 2 might instead agree simply to provide mutual assistance in relation to disciplinary matters, including the sharing of relevant information, and support in the gathering of evidence for the purposes of disciplinary investigations. This would not necessarily however envisage the conferral of any formal decision-making authority on Association 1, in relation to the members of Association 2. Arrangements of this sort are known to exist between a number of associations, and might be effected for example by some form of Memorandum of Understanding.
- 2.3.3.3 In certain circumstances, more than one association may have jurisdiction and be required to undertake separate disciplinary proceedings. It may in these circumstances be appropriate to consider the coordination of disciplinary investigations and/ or proceedings (so as to avoid unnecessary duplication from a practical perspective). It may be appropriate for one association to take the lead in relation to any substantive investigation/ proceedings. This may, for example, be the most relevant association, having regard to the alleged conduct and to the related evidence in the case. Member associations are encouraged to

⁴ The Canadian Institute of Actuaries (CIA) and the U.S.-based organizations have entered into a cross-border discipline agreement that provides, in essence, that if a member of a U.S.-based organization is accused of breaching Canadian professional standards of conduct, practice, or qualification when practising in Canada, the CIA will investigate the matter and, if the CIA finds that the actuary has committed such a breach, the CIA will so notify the relevant U.S.-based organization(s). Similarly, if a question arises concerning a CIA member's practice in the United States, the question will be investigated by the U.S.-based Actuarial Board for Counseling and Discipline, and the relevant U.S.-based organization(s) will notify the CIA of any determination of breach of U.S. professional standards of conduct, practice, or qualification.

enter into a dialogue with other relevant association(s), where applicable, at the outset of such a case, in order appropriately to co-ordinate the investigation and proceedings, having regard to all of the circumstances.

- 2.3.3.4 Member associations will also wish to consider what weight or recognition they can appropriately give to the disciplinary findings or determination of another association. So, for example, certain European associations are known to have in place provisions which permit a degree of weight or reliance to be placed on the formal findings of another association, thereby avoiding to some extent the need for a further potentially duplicative inquiry into the relevant factual circumstances.
- 2.3.3.5 A further variant would envisage arrangements by which a joint disciplinary panel or committee is convened, comprising appropriate representatives or appointees from each of the associations involved. This could enable a single hearing by a jointly recognized panel, the decision of which is formally recognized (and enforced) by each association. This model has again been adopted for certain purposes in North America and avoids the necessity for multiple hearings in relation to the same member and conduct.
- 2.3.4 In the longer term, there may be value in reviewing the scope for a greater level of consistency/ harmonization between the specific tests/ thresholds applied by associations in establishing the necessity for disciplinary action.

This paper was approved by the Professionalism Committee on 28 March 2014. It was adopted as PG2 by Council on 7 October 2017.

A Global Framework for Insurer Solvency Assessment





Research Report of the Insurer Solvency Assessment Working Party INTERNATIONAL ACTUARIAL ASSOCIATION ASSOCIATION ACTUARIELLE INTERNATIONALE

A Global Framework for Insurer Solvency Assessment

A Report by the Insurer Solvency Assessment Working Party of the International Actuarial Association

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Preface

Acting in support of the International Association of Insurance Supervisors (IAIS) the Insurance Regulation Committee of the International Actuarial Association (IAA) formed the Insurer Solvency Assessment Working Party (WP) in early 2002 to prepare a report on insurer solvency assessment. This Report represents the culmination of that mandate and is meant to assist in the development of a global framework for insurer solvency assessment and the determination of insurer capital requirements. The IAA considers this Report to represent useful educational material. The Report is not intended to express a unique or absolute point of view with regard to the issues which surround the topic of insurer solvency assessment. The materials contained in the Report will need to be enhanced over time in light of new developments.

In the course of its mandate, the WP made several presentations on the work of the WP before a variety of insurance supervisory and professional actuarial meetings. The WP met with the IAIS Technical Sub-Committee on Solvency and Other Actuarial Issues, the insurance internal market directorate of the European Commission, the Conference of European Insurance Supervisors, as well as numerous professional actuarial associations. Feedback from these presentations has been both positive and constructive.

The WP wishes to extend its thanks to all those individuals and organizations who have provided commentary on this report. Of particular note are the contributions of the Casualty Actuarial Society and the Society of Actuaries who have provided assistance with the editing of this report.

The WP members also extend their sincere gratitude to those who have contributed to this report with their wisdom, insight and practical examples. In particular, we would like to recognize the work of Peter-Paul Hoogbruin, Christoph Hummel, John Manistre, Greg Martin, Ulrich Mueller, Martin Paino, Les Rehbeli, Shawn Stackhouse, Erik von Schilling and Brent Walker for their contributions to this report. The Chair expresses special thanks to Julie Silva for her special talents in assembling and formatting this extensive report and set of appendices. Finally, the WP members appreciate the support of their employers and actuarial associations throughout this project. The Working Party looks forward to wider discussion of the issues discussed in this report.

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1. Introduction

- 1.1 One of the current initiatives of the International Association of Insurance Supervisors (IAIS) is to develop a global framework for insurer capital requirements. Acting in support of the IAIS, the International Actuarial Association (IAA) has formed an Insurer Solvency Assessment Working Party to prepare a paper on the structure for a risk-based solvency assessment system for insurance. The terms of reference of the Working Party (WP) are as follows:
 - The WP should describe the principles and methods involved in quantifying the total funds needed to provide a chosen level of confidence to policyholders and shareholders that the insurer's policyholder obligations will be met.
 - The paper should be specific and practical enough that its recommended principles and methods could be used as a foundation for a global risk-based solvency capital system for consideration by the IAIS.
 - The paper should, starting from a coherent risk framework, identify risk measures that can be explicitly or implicitly used to measure the exposure to loss from risk and also any risk dependencies. The paper should also identify measures that are not effective in this regard.
 - In balancing its focus between practical versus sophisticated methodologies, the working
 party will place greater weight on those methodologies with the greatest likelihood of
 practical implementation. However, since simple methodologies that can be applied to many
 insurers in a territory or across territories may prove insufficiently reliable or capital efficient,
 the WP should consider whether risk models developed internally by insurers can provide a
 useful and reliable approach.
- 1.2 The focus of prudential regulation and supervision of financial institutions is usually defined as the protection of the rights of policyholders and depositors. Since this includes oversight of the continuing ability of insurance companies to meet their contractual and other financial obligations to their policyholders, the supervisor has a strong interest in the continuing solvency of both insurers and reinsurers under its jurisdiction. The application of this report is intended for both direct writing insurers as well as reinsurers. Throughout this report, "insurer" will be used to refer to both direct writing insurance companies as well as to reinsurers.
- 1.3 This report deals with methods the supervisor might use to assess the current financial position as well as to understand the possible future financial positions of insurers. Its primary focus is on capital requirements and practices that strengthen the ability of a company to successfully manage its risk in a way to lessen its need for capital.
- 1.4 Working within the terms of reference, this report is organized as follows:
 - Section 3 "Capital Requirements" reviews the purpose of capital and important principles for the determination of appropriate levels of risk; describes defensive tactics for solvency protection and their role in the design of a capital requirement
 - Section 4 "Framework for Solvency Assessment" provides an introduction to the WP's suggested approach towards insurer capital requirements
 - Section 5 "Insurer Risks" describes the key insurer risks and the key considerations in measuring them
 - Section 6 "Standardized Approaches" describes the considerations involved in the design of standardized approaches to solvency assessment

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- Section 7 "Advanced Approaches" describes the considerations involved in the design of advanced or company-specific approaches to solvency assessment
- Section 8 "Reinsurance" outlines the unique considerations involved with reinsurer solvency assessment
- Section 9 "Total Company Requirement" describes the additional considerations involved in developing a combined approach to solvency assessment for an entire company or group of companies
- Appendix A "Life Insurance Case Study" provides a life insurance numerical example of the most important elements of this report
- Appendix B "Non-Life (P&C) Insurance Case Study" provides a non-life insurance numerical example of the most important elements of this report
- Appendix C "Health Insurance Case Study" provides a health insurance numerical example
 of the most important elements of this report
- Appendix D "Market Risk" provides an in-depth discussion of this risk as it affects insurers
- Appendix E "Credit Risk" provides an in-depth discussion of this risk as it affects insurers
- Appendix F "Lessons from Insurer Failures" provides insights from sample insurer failures
- Appendix G "Introduction to Insurance Risk" provides a layman's introduction to the risks faced by insurers
- Appendix H "Analytic Methods" provide proven mathematical methods for estimating loss distributions
- Appendix I "Copulas" describes the key features of these mathematical techniques for approximating risk dependencies

2. Executive Summary

- 2.1 This paper has been prepared for the International Association of Insurance Supervisors (IAIS) to explore the elements needed for an international capital standard for insurers and to provide a "best practices" approach available to all supervisors. It deals with methods the supervisor might use to assess the current financial position as well as to understand the range of possible future financial positions of insurers. Its primary focus is on capital requirements for insurers.
- 2.2 To assist in the development of a global framework for insurer solvency assessment and the determination of insurer capital requirements, the WP proposes a number of guiding principles to be used in their design. In summary, these principles focus on:
 - A "three-pillar" approach to supervision (see Section 4.1)
 - Principles versus rules-based approach (see Section 4.2)
 - Total balance sheet approach (see Section 3.1.7 and 4.3)
 - Degree of protection (see Section 3.1.5 and 4.4)
 - Appropriate time horizon (see Section 3.1.6 and 4.5)
 - Types of risks to be included (see Section 5.1.2, 5.1.3 and 5.2)
 - Appropriate risk measures (see Section 4.5 and 5.3)
 - Risk dependencies (see Section 6.2.1 and 9.3)
 - Risk management (see Section 3.2.2)
 - Standardized approaches (see Section 4.6 and 6)
 - Advanced or company-specific models (see Section 4.6 and 7)
 - Market efficient capital requirements (see Section 3.1.1)

"Three Pillar" Approach

- 2.3 The WP believes that a multi-pillar supervisory regime is essential for the successful implementation of the global framework proposed in this report. The conclusions of this report are consistent with the "three pillar" approach to the regulation of financial service entities that is reflected in the Basel Accord for the regulation of banks internationally.
- 2.4 The approach envisaged would have three pillars consisting of:

Pillar I: Minimum financial requirements **Pillar II:** Supervisory review process **Pillar III:** Measures to foster market discipline.

The definition of these pillars needs to reflect the specific features of insurance.

2.5 Pillar I (minimum financial requirements) involves the maintenance of a) appropriate technical provisions (policy liabilities), b) appropriate assets supporting those obligations and c) a minimum amount of capital (developed from a set of available and required capital elements) for each insurer. Of primary interest to the WP in this report are the capital requirements. To the greatest extent possible given the sophistication of the approach chosen and the insurer's ability to model them, it is the WP's view that these calculations must reflect a comprehensive view of the insurer's own risks.

- 2.6 Pillar II (supervisory review process) is needed, in addition to the first pillar, since not all types of risk can be adequately assessed through solely quantitative measures. Even for those risks that can be assessed quantitatively, their determination for solvency purposes will require independent review by the supervisor or by a designated qualified party. This is especially true for those determined using internal models. The second pillar is intended to ensure not only that insurers have adequate capital to support all the risks in their business but also to encourage insurers to develop and use better risk management techniques reflective of the insurer's risk profile and in monitoring and managing these risks. Such review will enable supervisory intervention if an insurer's capital does not sufficiently buffer the risks.
- 2.7 Pillar III serves to strengthen market discipline by introducing disclosure requirements. It is expected that through these requirements, industry "best practices" will be fostered.
- 2.8 The actuarial profession can assist supervisors within the second pillar by providing independent peer review of the determination of policy liabilities, risk management, capital requirements, current financial position, future financial condition etc., where these entail the use of substantial judgement or discretion. Assistance can also be provided within the third pillar in the design of appropriate disclosure practices to serve the public interest.
- 2.9 The WP believes that while customization of the individual pillars is needed as they are applied to insurers, the use of a "three-pillar" approach similar to that used by the banks makes sense and is extremely useful given,
 - the common features shared by the two financial sectors
 - that many insurance supervisors are part of integrated financial supervisory agencies, and are well acquainted with the Basel Accord.
- 2.10 Some reasons for the differences in approach to be used for insurance would include 1) the nature of insurance risks and the techniques to assess them in Pillar I, 2) the need for multi-period review under Pillar II and 3) the definition of relevant information for purposes of disclosure in Pillar III.

Principles Versus Rules-Based Approach

2.11 Solvency assessment should be based on sound principles. Implementation of solvency assessment will require rules developed from these principles. However, the WP considers that the rules used should include provisions to allow their adaptation to current or unforeseen circumstances with the prior agreement of the relevant supervisor.

Total Balance Sheet Approach

- 2.12 The application of a common set of capital requirements will likely produce different views of insurer strength for each accounting system used because of the different ways accounting systems can define liability and asset values. In the view of the WP, these definitions may create a hidden surplus or deficit that must be appropriately recognized for the purpose of solvency assessment.
- 2.13 The WP believes that a proper assessment of an insurer's true financial strength for solvency purposes requires appraisal of its total balance sheet on an integrated basis under a system that depends upon realistic values, consistent treatment of both assets and liabilities and does not generate a hidden surplus or deficit.

Degree of Protection

- 2.14 It is impossible for capital requirements, by themselves, to totally prevent failures. The establishment of extremely conservative capital requirements, well beyond economic capital levels, would have the impact of discouraging the deployment of insurer capital in the jurisdiction.
- 2.15 In forming its recommendation for an appropriate degree of protection for insurer solvency assessment purposes, the WP considered the role of rating agencies in assessing insurers and the substantial volume of credit rating and default data available from these agencies. The WP also noted the relation between the degree of protection and the time horizon considered. In addition, the specific manner of applying the capital requirement risk measure may also affect the degree of protection chosen. The WP's recommendation for degree of protection is therefore linked with its recommendation for an appropriate time horizon for solvency assessment as shown in the following paragraphs.

Appropriate Time Horizon

- 2.16 A reasonable period for the solvency assessment time horizon, for purposes of determining an insurer's current financial position (Pillar I capital requirements), is about one year. This assessment time horizon should not be confused with the need to consider, in such an assessment, the full term of all of the assets and obligations of the insurer.
- 2.17 The amount of required capital must be sufficient with a high level of confidence, such as 99%, to meet all obligations for the time horizon as well as the present value at the end of the time horizon of the remaining future obligations (e.g., best estimate value with a moderate level of confidence such as 75%).
- 2.18 Due to the long term and complex nature of some insurer risks, the insurer should consider valuing its risks for their lifetime using a series of consecutive one year tests with a very high level of confidence (say 99%) and reflecting management and policyholder behaviour (but no new business). Alternatively, this test can be conducted with a single equivalent, but lower (say 90% or 95%), level of confidence for the entire assessment time horizon. This lower level of confidence over a longer time horizon is consistent with the application of a series of consecutive higher level one-year measures.

Types of Risk Included

2.19 In principle, the WP recommends that all significant types of risk should be considered (implicitly or explicitly) in solvency assessment. However, there may be valid reasons why certain risks do not lend themselves to quantification and can only be supervised under Pillar II. The WP believes that the types of insurer risk to be addressed within a Pillar I set of capital requirements are underwriting, credit, market and operational risks.

Appropriate Fisk Measures

2.20 A risk measure is a numeric indicator that can be used to determine the solvency capital requirement for an insurance company. The most appropriate risk measures for solvency assessment will exhibit a variety of desirable properties (e.g., consistency). Of course, it is difficult for one risk measure to adequately convey all the information needed for a particular risk. One risk measure that exhibits several desirable properties for various (but not all) risks is Tail Value at Risk (also called TVaR, TailVar, Conditional Tail Expectation, CTE or even Policyholders' Expected Shortfall). In many situations, this risk measure is better suited to

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insurance than Value at Risk (VaR), a risk measure commonly used in banking, since it is common in insurance for their risk event distributions to be skewed.

Risk Dependencies

- 2.21 The solvency assessment method should recognize the impact of risk dependencies, concentration and diversification. This has implications for the desirable properties of the appropriate risk measure.
- 2.22 Risk dependencies within an insurer can have a very significant impact on the overall net effect of its risks (compared to the gross effect without taking account of their dependencies). Even the most basic fixed-ratio method should implicitly allow for risk dependencies. Currently, required capital formulas in Japan and the U.S. incorporate some recognition of dependencies, concentration and diversification. However, in many countries, diversification between different risk types is not recognized in the formulas for required capital.
- 2.23 The concept of describing dependencies between risks, and particularly by using a technique based on copulas, is discussed in this report and its Appendices.
- 2.24 For purposes of solvency, it is imperative to find methods or models to describe dependencies both in the absence of reliable or scarce data as well the "increasing" dependency in extreme events (i.e., in the tails of the probability distributions which describe the risks). The latter is very important to solvency assessment as the events in the tail of the distribution are those which can jeopardize the financial position of an enterprise most.

Risk Management

- 2.25 The solvency assessment method should recognize appropriately the impact of various risk transfer or risk sharing mechanisms used by the insurer.
- 2.26 The actuarial control cycle referred to in this report is a continuous review process that is fundamental to any soundly based enterprise risk monitoring process. The control cycle provides information to improve the company's ability to manage its risks and make more effective business decisions. Some of the ways in which an insurer can manage its risks, beyond the fundamentals of prudent claim management, include
 - risk reduction
 - risk integration
 - risk diversification
 - risk hedging
 - risk transfer
 - risk disclosure
- 2.27 While many of these types of risk management serve to reduce the risk in question, it is important to note that some of them create additional risk related to the technique itself. For example, both hedging and reinsurance create counterparty risk, a form of credit risk.

2.28 Regardless of the risk management process used by the insurer for its risks, including full retention of its risks, effective management of these risks is encouraged by appropriate disclosure of the extent of the risks and their management by the company. Appropriate audiences for such disclosure include the stakeholders of the insurer including the supervisors.

Standardized Approaches

- 2.29 Many of the discussions comparing different solvency assessment methods (e.g., fixed-ratio versus risk-based capital RBC versus scenario-based, etc.) do not adequately explain the optimum conditions that must be present for each method to be reliable. Supervisors considering new methods should be alerted to the conditions needed for the new methods to be a success. The WP believes these concepts are worthy of note and appropriate inclusion in our report.
- 2.30 Simple risk measures are appropriate when it is recognized that the risk in question is important from a solvency perspective but there does not currently exist a generally accepted view of how the risk should be assessed. They are also appropriate if the risk is of minor importance.
- 2.31 Sophisticated risk measures are appropriate for material risks where one or more of the following conditions exist:
 - The risk in question is very important from a solvency perspective and cannot be adequately assessed through the use of simple risk measures,
 - There is sound technical theory for the risk to be assessed and the risk measure to be used,
 - Sufficient technical skills and professionalism are present among the staff,
 - Relevant and sufficient data is present or the knowledge about the risks is otherwise reliable,
 - The risk is actually managed in accordance with the risk measure used,
 - Risk management practices are evident to a high degree.

Advanced (Company-Specific) Approaches

- 2.32 For stronger, more technically able companies with effective risk management programs, it may be appropriate to introduce advanced (or company-specific) models that can incorporate all types of quantifiable risks. An internal model can also incorporate all types of interactions among risks if those interactions are understood and quantifiable. However, in practice, many aspects of risk are not well understood, particularly in the case of extreme events for which little history exists (and which are most important for solvency assessment). Hence, internal models provide a model of risks faced by an insurer that can, at best, be described as representing reality in an approximate way. In building an internal model, care must be given to capture the most important risk variables.
- 2.33 Required capital can be thought of as a second line of defence protecting an insurance company's solvency and its policyholders. The first line of defence is solid risk management. If trouble develops that cannot be prevented through management of a risk, then capital should be available to cover the financial losses that emerge. It follows that in order for a supervisor to be content with a lower amount of required capital under a company-specific approach, there must be some assurance that the particular source of risk is under control, its effects are well mitigated and there is a reduced need for the required capital. Therefore, in approving a company's use of an advanced or company-specific approach, the supervisor should confirm that the company has in place appropriate risk management processes together with a satisfactory reporting structure.

2.34 A particular strength of internal models is their ability to capture the impact of combinations of risks beyond a simple aggregation of individual risk factors that cannot accurately assess risk interaction effects.

Market Efficient Capital Requirements

2.35 Excessive minimum capital requirements, while affording additional solvency protection, will also serve to impede capital investment in insurers because of the perceived additional cost of capital required in the business, beyond that required by economic levels of capital, that may not be recoverable in product pricing.

3. Capital Requirements

3.1 The Purpose of Capital

- 3.1 In this report, the WP sets out a consistent framework for capital requirements and risk oversight for insurance companies that could be applied in almost all jurisdictions world-wide to suit the circumstances of each jurisdiction. Under this framework, the capital requirements and risk oversight process in two jurisdictions with similar business, legal, economic and demographic environments and supervisory philosophy and controls should be comparable. The resulting capital requirements may differ materially between jurisdictions that have significantly different environments for their insurance markets and companies. Nonetheless, because these requirements are based on a consistent set of principles, the differences between them should be explainable as a function of the different environments.
- 3.2 To set a target or requirement for the amount of capital and surplus that should be held by an insurance company requires a clear vision of the purposes for which capital is held. This then clarifies how the requirement should be determined. This section is devoted to reviewing the purpose of capital and the important principles for determining appropriate levels of capital.
- 3.3 An effectively defined capital requirement serves several purposes:
 - provides a rainy day fund, so when bad things happen, there is money to cover them
 - motivates a company to avoid undesirable levels of risk (from a policyholder perspective)
 - promotes a risk measurement and management culture within a company, to the extent that the capital requirements are a function of actual economic risk
 - provides a tool for supervisors to assume control of a failed or failing company
 - alerts supervisors to emerging trends in the market
 - ensures that the insurance portfolio of a troubled insurer can be transferred to another carrier with high certainty.
- 3.4 In developing capital requirements for insurers it is desirable to consider the concept not only of "target capital" (TC) but also "minimum capital" (MC). TC refers to the appropriate amount of capital to be held in consideration of the risks assumed by the insurer. MC serves as a final threshold requiring maximum supervisory measures in the event that it is breached. This Report focuses primarily on the issues surrounding the development of TC. Note that in this Report the WP uses the term "free surplus" (FS) to mean the financial statement excess of assets over liabilities and regulatory capital (TC) requirements.

3.1.1 Going Concern or Run-Off

- 3.5 Economic capital is what the firm judges it requires for ongoing operations and, for an insurance company, what it must hold in order to gain the necessary confidence of the marketplace, its policyholders, its investors and its supervisors. Economic capital can be considered to be the minimum amount of equity or investment to be maintained in the firm by its owners (shareholders) to ensure the ongoing operations of the firm. Since a firm's net income is often measured as a rate of return on investor equity, many firms are motivated to maintain actual capital as close as possible to economic capital in order to maximize return on equity.
- 3.6 The WP is concerned not with economic capital but with target regulatory capital (i.e., TC), the capital that a firm is required by its supervisor to hold as a condition of being granted a licence or to continue to conduct the business of insurance in a jurisdiction. The focus in discussing regulatory capital is often placed on the sufficiency of capital to support the winding up of a firm's affairs in the event of insolvency. From this point of view, regulatory capital is often thought of as providing for a successful run-off of the firm or a portfolio transfer. However, the firm before insolvency is a dynamic organization that is constantly changing. The capital that

would be needed in the event of insolvency depends on the company's business portfolio immediately preceding the event of insolvency. In this sense, a regulatory capital requirement is based on the ongoing dynamic insurer's business. Therefore, regulatory capital has aspects of both the going concern and run-off situations; it would be an error to characterize target regulatory capital as determined strictly on a going concern basis or strictly on a run-off basis.

3.7 Excessive capital requirements, while affording additional solvency protection, will also impede capital investment in insurers because the additional cost of capital may not be recoverable in product pricing. This either raises the cost of insurance to its buyers or prevents a market from existing.

3.1.2 Who and What is to be Protected

- 3.8 Providing protection to policyholders in the event of an insurer's failure is a traditional justification for a regulatory capital requirement. In some jurisdictions, protection may be provided for general creditors of the insurance company as well. Creditors' protection is not, however, a feature of many legal systems and will not be treated in depth in this report. Note that no consideration is given to the protection of the financial interests of the owners or shareholders of an insurer. In the case of a mutual insurance company whose owners are its policyholders, protection considerations apply only to these individuals as policyholders and not in respect of their roles as owners.
- 3.9 The type of protection to be provided to a policyholder in respect of an insurance or annuity contract will depend upon the terms of the contract and the nature of the insurance coverage.
- 3.10 Consider, for example, a typical short-term general (property and casualty) or group life or health insurance contract. If there were no incurred claims outstanding under the contract, the usual goal in an insurer's failure would be to provide insurance coverage for the remaining term of the policy. It is assumed that the insured would then be able to arrange for a continuation of insurance with another insurance company. This assumption is generally valid because these contracts normally do not contain guarantees with respect to renewability or the level of renewal premiums. If claims have been incurred under a policy by the time the insurer has failed, the goal in a company failure would be to provide sufficient funds to satisfy the outstanding claims.
- 3.11 Longer-term insurance policies often involve predetermined premiums that are level for extended periods during the lifetime of the contract. Under these contracts, the year-by-year cost of insurance is not the same as the amount provided in the level premium to meet this cost. This leads to the creation of active policy liabilities or reserves that are held by the company to meet future insurance costs. In some jurisdictions, some portion of this liability may be represented concretely by guaranteed cash surrender values.
- 3.12 Certain insurance contracts, particularly life and health policies, guarantee the continuing coverage or protection of the insured (preservation of insurability). Since an insured's condition may deteriorate over time, that individual might not be able to secure from another insurance company a continuation of insurance coverage in the event of failure of the primary insurer. For these contracts, in the event of insurer failure, supervisors or liquidators often seek to have these policies continued in force for their remaining terms.

3.1.3 Exit Strategy Under Failure

3.13 The method of liquidating a failed insurer is a principal consideration in determining regulatory capital. In many cases, the preferred method will be to have another insurer, or several insurers, assume the failed company's insurance portfolio. In this case, the primary goal in setting a regulatory capital requirement is to ensure there will be sufficient assets on hand in the company's estate so that another insurer will accept these assets as payment to assume the

business. In its work, the WP has assumed this is the course that would be followed in the event of an insurer's failure.

- 3.14 There may be circumstances under which the policy liabilities are not transferred to or assumed by another insurer. This may be more likely in the event of a failure of a general (property and casualty) insurer than of a life insurer. In this case, the liquidator's focus will be on the payment of incurred claims. The financial resources necessary to accomplish this will depend upon the organization established to run off this business. There can be considerable variation in the administrative costs of handling these claims. In setting capital requirements, a jurisdiction should not only provide for the amount of the claims on a failed insurer but it should also take into account the methods that would be used, and their associated costs, in settling these claims.
- 3.15 Many jurisdictions have consumer guarantee or compensation funds that protect policyholders in the event of failure of an insurance company. The coverage offered by the guarantee fund will usually have limits on benefits payable on a single contract. In some cases, these guarantee funds may be backed up by an organization that can assume the run-off of a failed insurer; this could have an important effect on the estimated costs of any future liquidation.

3.1.4 The Challenge of Insurer Solvency Assessment

- 3.16 Insurance contracts present unique challenges for solvency assessment. While insurers share a number of types of risk to which they are subject with other businesses, especially other financial institutions, their core risk is because of the fundamental nature of their business, the marketing and underwriting of risk. The types of risk to which insurers are subject, are detailed later in this report.
- 3.17 The proper assessment of underwriting risks usually requires the detailed examination of insurance product-specific and relevant industry data for both the frequency and severity of product events. The product events may involve the payment of specified amounts upon an event such as morbidity or death. They may also involve the reimbursement of specific types of costs whose amount will not be known until the insured service is actually provided (e.g., medical costs, property damage claims, etc.).
- 3.18 The assessment of underwriting risks for solvency purposes is challenging for several reasons:
 - There is not a liquid market for many types of insurance contract liabilities.
 - Insurable events can be subject to several types of assumptions (e.g., disability income claim payments require the estimation of the frequency and severity of claims as well as the rate of policyholder lapsation, among other assumptions).
 - Appropriate assumptions may be dependent on the experience of the insurer underwriting that risk. Such experience may not be available in sufficient detail or volume to fully estimate all aspects of the assumption with credibility without referring to relevant industry data, where this is available. In addition, the risk is dependent on the manner in which the risk was sold. Sometimes, one contract may be sold to many customers via various distribution channels, other times each customer may get a uniquely defined contract.
 - Due to the long-term nature of many insurance contracts, the time horizon for projecting the future contract cash flows can extend for several years or even decades into the future thus making the estimation of assumptions challenging.
 - For several types of life insurance products, the benefits available to the policyholder are dependent in some manner on the performance of assets purchased by the insurer. Risk assessment must be able to model the manner in which the insurer carries out its asset/liability management responsibilities.

- Frequently, the assessment of underwriting risk requires the modelling of policyholder behaviour (e.g., premium payment lapsation, the exercising of policyholder options).
- The long-term nature of many insurance contracts requires that the uncertainty and extreme event components of underwriting risk be carefully considered.
- Significant risk dependencies within an insurer's risks need to be carefully considered in determining an appropriate solvency structure for insurers.

3.1.5 The Degree of Protection

- 3.19 The strength of a capital requirement can be thought of in terms of the probability that a company's assets backing liabilities, together with required capital, will be sufficient to satisfy all of its obligations to its policyholders. This probability represents a confidence level. It would be desirable to be able to calculate this probability once the amount of capital was known or to know how much protection is provided by current capital and surplus. Conversely, an approach to determining required capital would be to first choose this confidence level and then determine the amount of capital necessary to achieve it. A difficulty with this approach is that some risks are not quantifiable, either because of their qualitative nature or because sufficient data is not available to properly assess the risk. Nonetheless, this is a promising approach that the WP believes can yield good results. In adopting this approach, it is important for supervisors in each jurisdiction to decide on the confidence level they believe is appropriate for the insurance companies supervised. Two practical considerations involved in the introduction of a new confidence level may be that: 1) if the new requirements are substantially higher than the previous ones; an appropriate transition period may be needed and 2) for some extreme circumstances (e.g., a steep fall in the investment market) a clear and transparent mechanism may be needed for the temporary relaxation of the solvency rules in order to avoid widespread hardship on the entire industry.
- 3.20 It must be recognized that the confidence level must be less than one (1) or 100%. No finite amount of capital can provide an absolute guarantee that a company's policyholders will be protected in all circumstances. It is important to recognize that in any supervisory regime, no matter how strict, company failures will always be possible. This possibility cannot be eliminated through a high capital requirement.

3.1.6 Time Horizon

- 3.21 Financial statements, including reports on capital, are usually prepared by insurance companies at the end of each fiscal year or the end of each quarter year. Producing these statements is a considerable task that requires significant preparation time. Often there will be a delay of several months between the statement date and the actual receipt of the statement by the supervisory authority. The company management may also require some time to implement possible corrective actions. The supervisor, having many companies to oversee, may need several additional months to fully analyse a particular company's results. If this analysis shows a company's position to be weak, it will take additional time to formulate action plans and issue appropriate directions to the company. If it were necessary to remove a company's licence and "wind it up," the formalities of governmental and legal systems could introduce considerable delays before the supervisor's objectives are achieved. During the period until final action against a weak or insolvent company is taken, the company would continue to operate and conduct business, including the sale of new insurance and/or annuity contracts.
- 3.22 In formulating a capital requirement in a particular jurisdiction, a supervisor must take into account the time horizon between the date as of which company financial statements are prepared and the expected date by which a supervisor could take control of the insurer if this was deemed to be necessary. Since this time horizon depends upon local business practices, the supervisor's

resources, legislation and the legal system, this horizon will vary from one jurisdiction to another. However, it would be rare to assume this time horizon could be considerably shorter than one year.

Term of Assets and Obligations

- 3.23 This assessment time horizon should not be confused with the need to consider, in such an assessment, the full term of all of the assets and obligations of the insurer.
- 3.24 Regardless of the solvency assessment period time horizon (e.g., insurer's assets must be adequate within a 99% probability that the insurer will still be solvent in one year), the solvency assessment must reflect the full term of the assets and obligations of the insurer. These may extend for many years or decades beyond the end of the assessment period time horizon.

Period of Liquidation

- 3.25 Since supervisory intervention in a nearly bankrupt company still requires a period of time to runoff, rehabilitate or sell off the company, it is necessary to consider this additional period of time. The solvency assessment time horizon should not be shorter than the expected length of time between the technical point of insolvency to wind-up or restructuring of the distressed insurer.
- 3.26 This period may be different for an insurer with business that is likely to be simply run-off versus an insurer whose business will be sold or restructured as a going-concern entity.

Interaction with Confidence Level

3.27 If a certain fixed acceptable level of insolvency risk per year is assumed (expressed as a certain allowable annual probability of insolvency), then extending the time horizon should always result in the need for additional capital. Alternatively, a fixed amount of capital always provides a lower confidence level in solvency over a longer period (e.g., higher probability of insolvency over the longer time horizon).

Interaction with Modelling Behaviour

- 3.28 Extending the time horizon will generally increase the need to make explicit assumptions on future policyholder as well as management behaviour, since a longer time horizon will increase the probability that current behaviour will change. In particular, the longer the time horizon, the more reasonable it seems to allow for:
 - a. future transfers of risk (e.g., by changing the reinsurance policy or transferring the portfolio to another party); for instance, because of its size, this other party may not ask for capital to cover the remaining volatility risk;
 - b. future changes of the company's (re)investment strategy and/or internal risk management procedures, resulting in lower ALM risks and/or lower operational risks respectively;
 - c. future offsetting risks because of new business that shows "opposite" types of risk.
- 3.29 In general, using a longer time horizon requires increasing judgement to be applied in the projections (i.e., larger model errors).

Future Financial Condition Reports

3.30 A longer solvency assessment time horizon may be useful where the purpose is to provide insight into the future financial condition of the insurer under a variety of plausible adverse scenarios. Some supervisors require that a multi-period future financial condition report be prepared annually for presentation to the insurer's Board of Directors and a copy provided to the supervisor. Typically these reports are not publicly available because of the confidential nature of the information they contain.

3.1.7 Role of Accounting – The Need for a Total Balance Sheet Requirement

- 3.31 An insurer's capital is determined from its financial statements as the difference between the value of its assets and liabilities. The strength of that capital value is directly dependent on the relative strength of the methods and assumptions used to determine the asset and liability values. The use of inconsistent methods and assumptions in the determination of asset and liability values (or between components within the assets and liabilities) has the potential to significantly affect the relative strength of the capital positions of otherwise similar insurers. Applying a common set of capital requirements will likely produce different views of insurer strength for each accounting system used because of the different ways that accounting systems can define liability and asset values. These definitions may create a hidden surplus or deficit. In the view of the WP, capital requirements generated under these systems must appropriately recognize these hidden values.
- 3.32 Ignoring for the time being, the different possible types of capital or surplus (retained earnings), the amount of capital attributed to a particular insurance company will depend heavily on how its policy liabilities (actuarial reserves) are calculated. The methods used to determine these reserves vary considerably among jurisdictions. In certain jurisdictions, conservatism and financial strength are emphasized; one often hears mention of "hidden surplus" contained within these reserves. In others, the emphasis is placed upon the appropriate reporting of earned income and actuarial reserves are considerably less conservative than in the first case. This variability demonstrates that in choosing a capital requirement, or in comparing capital amounts between companies, it is necessary to take into account the methods and assumptions used to determine all the components of the balance sheet including actuarial reserves.
- 3.33 The WP is aware of the work currently being done by the International Accounting Standards Board (IASB) to bring about a uniform international accounting standard for financial institutions. As part of this project, the IAA is assisting the IASB in determining a standard approach to actuarial principles and methods for the determination of actuarial reserves in accordance with the new standard. Initially, the WP viewed its mandate as the determination of a standard capital requirement based on a standard accounting system. However, since the timing of the completion of the IASB project is uncertain and the date of its adoption by all jurisdictions is not clear at this time, the WP has selected a "total balance sheet" approach (more on this in section 4.3) as a common basis for establishing capital requirements.

3.2 Supplements to Capital

3.34 Capital requirements can be thought of as a defence tactic used to protect policyholders and depositors. However, it is not the only tactic in use by insurance companies and by supervisors. The other defensive tactics that are in place will influence the amount of capital required by an insurance company. In this section, we describe some of these factors and indicate how they could enter into the design of a capital requirement.

3.2.1 Corporate Governance

3.35 The primary defence in preserving a company's financial integrity is for the company to be well managed. There should be clear lines of responsibility and reporting and the company should have well-established and articulated operating rules and procedures. In summary, the company's corporate governance is an important factor in preserving its well-being and its solvency. In setting Pillar II surplus target levels, the quality of a company's corporate governance should be considered. If management or directors have less than optimal control of the company's affairs, a higher than normal capital target level might be required. If the supervisor has not communicated corporate governance standards to supervised institutions and the overall level of corporate governance in the jurisdiction is not thought to be strong, it would be appropriate to reflect this in the design of a capital requirement.

3.2.2 Risk Management

- 3.36 A risk management program in an insurance company is an organized program in which sources and volumes of risk are tracked and procedures are in place to track and report on this risk. Important features of risk management include risk limits and risk management policies established by the board of directors, regular reporting of risk at the appropriate level in the company, and oversight by risk officers who are independent of business unit heads.
- 3.37 Risk management can be viewed as the first line of defence in a company or as a way to prevent the emergence of situations that could imperil the company. Capital supplements risk management; capital is required to support the financial costs to the company of situations where risk management is not a sufficient deterrent.
- 3.38 If the supervisor has confidence that a company's risk management program is very sound and effective, it could be appropriate to reflect this in the calculation of required capital. This issue will be discussed in section 5.4 of this report.

3.2.3 Investment Policy and ALM

- 3.39 Since insurance companies usually pay policyholder benefits much later than the time at which premiums are received from policyholders, they must invest funds until these are required to pay claims. The investment income received from these assets is significant and is taken into account when premium rates are established. If investment income is insufficient or the value of invested assets declines significantly, an insurance company could experience significant difficulty.
- 3.40 Sound investment policies and a program of asset/liability management can significantly mitigate market, credit and mismatch risks. It would be appropriate for the design of a capital requirement to reflect the presence or absence of these risks and their effect on a company's risk profile.
- 3.41 Certain investment risks can be controlled through a program of hedging. This involves the use of derivative securities. Hedging could be recognized in the design of a capital requirement. However, the supervisor would also want to consider the insurer's hedging program, the availability of necessary financial instruments, the experience and abilities of company personnel engaged in this sophisticated activity and the company's ability and success in conducting the hedging program.

3.2.4 Stress Testing

3.42 Regular stress testing can provide significant insight for company management into the risks faced by an insurer. Such stress testing has been introduced under various names (e.g., DST, DCAT, DFCA, DFA, etc.) in several jurisdictions. The method involves the construction of a computer model of an insurance company and the projection of all cash flows under a variety of scenarios of possible future experience. It is possible to study the effects on the company of the

future emergence of adverse experience and to measure the effects of various management strategies to deal with this experience.

3.43 Stress testing is a supplement to risk management. It does not replace a capital requirement but complements it. In a number of implementations, the object of the exercise is to verify that the company will be able to satisfy its regulatory capital requirements under a variety of future adverse scenarios. The WP is aware that the IAIS has prepared a paper on stress testing.

3.2.5 Risk Sharing and Participating Business

- 3.44 Certain insurance policies, most often life insurance, are sold as participating or with-profits business. These products feature participation by the insured in the profits of the business line through a system of policyholder dividends or bonuses. Other policies, such as Universal Life, contain adjustable or non-guaranteed elements that also allow the insurance company to adjust policy values, benefits or premiums in accordance with its experience with respect to these business lines.
- 3.45 An insurance company's ability to pass unfavourable experience to its policyholders through the adjustment of dividends or policy values may be restricted. Restrictions can arise from a concept such as *policyholders' reasonable expectations (PRE)* whereby policyholders may develop an expectation that various adjustable policy elements will continue to be administered by the insurer in accordance with past practices. For example, insurers may be reluctant to pass on the effects of unfavourable experience to policyholders for marketing reasons. PRE may be affected if changes to dividends or policy values are introduced with a considerable delay since the experience first began to deteriorate. Restrictions may also arise from contractual limits for certain policy elements (e.g., premiums, mortality and expense charges, interest crediting rates).
- 3.46 When considering capital requirements, the argument is often made that if risk is shared with policyholders through participation or adjustment of policy values, then lower capital requirements are appropriate for risk elements arising from this business. This argument has validity. However, in designing a capital requirement, the supervisor should consider the amount of credit that can be granted for risk pass-through features. A principal consideration is how the insurance company actually implements participation or adjustments. Significant capital relief should only be provided if the insurer passes unfavourable financial experience on to its policyholders without significant delay. The case may be slightly different depending on whether target capital (TC) or minimum capital (MC) is being considered. When defining the TC, fewer possibilities to transfer risks to policyholders might be appropriate than in the case of MC, which triggers maximum supervisory measures.

3.2.6 Actuarial Peer Review

3.47 Actuarial policy liabilities usually constitute the single largest item on the balance sheet of an insurance company. Therefore, the financial soundness of a company will often depend upon the quality of the actuarial work that was done to determine these liabilities. Independent peer review of a company actuary's work (by an experienced reviewer) has been found in some jurisdictions to increase the quality of that work as well as the supervisor's confidence in the company's financial results. It has been used in these jurisdictions to enhance the supervisor's confidence in the company's financial results. These periodic actuarial peer reviews act in concert with capital requirements to enhance the protection of policyholders.

3.48 The actuarial profession can assist supervisors within the second pillar by providing independent peer review of the determination of policy liabilities, risk management, capital requirements, current financial position, future financial condition etc., where these entail the use of substantial judgement or discretion. Assistance can also be provided within the third pillar in the design of appropriate disclosure practices to serve the public interest.

3.2.7 Policyholder Protection Funds

3.49 Many jurisdictions have consumer protection or guarantee funds that (partially) compensate policyholders for losses incurred due to the failure of their insurance company. The question arises whether it would be appropriate to recognize the effect of these funds when designing a capital requirement. Recognition means that a company's required capital is reduced since policyholders can be compensated by the fund. If this were done, financial responsibility would shift from the insurance company to those who pay for the fund, perhaps the government, but most often the entire insurance industry in the jurisdiction. This introduces a moral hazard issue since, in this situation, company management might be tempted to rely on the guarantee fund and to accept more risk than is appropriate for the company. The WP suggests that it is unwise to recognize guarantee funds within a capital requirement.

3.2.8 Supervisory Approach

3.50 The WP notes the crucial role played by insurance supervisors in fostering and maintaining an active and healthy insurance market within their jurisdiction. While the WP expresses no preference for one supervisory approach over another, we recognize the integral role played by supervisors along with other mechanisms (including capital requirements) which provide protection to insurance consumers. To the extent that global supervisory approaches differ then it will be difficult to construct a truly global framework for insurer solvency assessment and their attendant capital requirements.

4. Framework for Solvency Assessment

- 4.1 This section provides an introduction to the WP's suggested framework for capital requirements for insurance companies. The fundamental principles underlying the framework are described first. This section also considers various implementation issues that will influence a supervisor in designing a local requirement. Section 5 describes the nature of insurer risks and appropriate risk measures. Section 6 suggests standardized approaches to capital that can be applied uniformly to all insurance companies in a particular jurisdiction. Section 7 describes more advanced and company-specific approaches to capital. The final sections of this report address the unique nature of reinsurer risks as well as capital considerations that apply to the company as a whole after all of its risks and its business operations have been considered separately.
- 4.2 Since the framework is necessarily general, to allow for a variety of circumstances in various jurisdictions, several case studies have been included in the appendices to this report to illustrate the application of the framework. Several technical supplements that discuss certain ideas in much greater depth than would be appropriate in the body of the report are also included in the appendices.

4.1 The Three Pillars

- 4.3 The Basel Committee on Banking Supervision (BCBS) has articulated an approach to banking supervision (known as the Basel II proposal) involving three pillars: Capital, Supervision and Market Disclosure. The approach is well known and, because of its consistent structure, appears, in principle, to be adaptable to and suitable for the supervision of other financial institutions, including insurance companies. The WP agrees with this approach and it has been used in our work.
- 4.4 While the WP's task is to suggest a capital requirement framework for insurance companies, this might suggest that our work is mainly restricted to Pillar I. However, in considering the various risks that one would want to cover in a risk-based capital requirement, it has become apparent that there are several risks that are qualitative and not easily measured or quantified. Other risks are, in principle, quantifiable but not easily quantified since relevant data are not readily available and the appropriate models are not sufficiently developed at present. Since our approach to Pillar I is quantitative, these risks cannot be handled here. As does the BCBS, the WP suggests that these risks should be monitored by supervisors under Pillar II. While it might be appropriate for supervisors to increase the Pillar I capital requirements developed using our approach in consideration of these Pillar II risks, disclosure and corporate governance are also useful tools here as well. Suggestions concerning the treatment of these risks appear later in this report.

4.2 Fundamental Approach

- 4.5 The WP has assumed that the application by supervisors of the methods suggested herein would result in capital requirements that are consistent from one jurisdiction to another but are not necessarily identical. There are significant differences among jurisdictions in insurance products and markets, legal systems, accounting rules and population demographics that make it difficult to construct a universal capital requirement. Instead, the WP has sought to provide capital requirements that are both appropriate in individual jurisdictions and also consistent and comparable across jurisdictions.
- 4.6 To achieve our goal, we have sought to emphasize the basic principles that apply in each situation. It is only through an understanding of underlying principles that one can develop an appropriate treatment of various risks and aspects of the business of insurance.

- 4.7 Rules-based approaches to solvency assessment carry the advantage of simplicity of determination and of objectivity but can have the effect of encouraging insurers to "game the system" with respect to capital requirements, thus undermining the entire supervisory process. On the other hand, principles-based approaches focus on "doing the right thing." These approaches tend to require more subjective judgement in their preparation and a different approach to supervisory review.
- 4.8 The WP suggests that solvency assessment should be based on sound principles. Implementation of solvency assessment will require rules developed from these principles. Rules should be adaptable to current circumstances.
- 4.9 There is great value from having capital requirements that are internationally consistent. The number of multinational companies that operate in a variety of jurisdictions is increasing. Consistent or uniform capital requirements are desirable so that competing domestic and international carriers are subject to similar requirements and fair competition is maintained in all domestic markets. Unfortunately, multinational insurers are now subject to some combination of the requirements of their home jurisdictions as well as the requirements of each foreign jurisdiction in which they do business. For example, prudential supervision in the European Union (EU) is based on the so called home country principle, which means that legal entities are supervised by the home country supervisors for all their business; the supervision by the host state supervisors is restricted to some emergency situations only. Hence, a subsidiary of a multinational insurer is supervised by authorities of the state in which the subsidiary is domiciled. but a branch is supervised by the authorities of the state where the insurer is domiciled. Uniform international solvency standards would facilitate co-operation between the foreign and home supervisors of an international company and could enable the foreign supervisor to place significant reliance on the work of a company's home supervisor. In addition, fair competition and active insurance markets are encouraged when the requirements of the home and the foreign jurisdictions are consistent.
- 4.10 In particular, reinsurance is an international business. Both primary insurers and local supervisors require reassurance with respect to the financial strength of reinsurance companies who reinsure local business. A set of internationally consistent financial standards would greatly facilitate the understanding by all concerned of reinsurers' financial strength. It would also help to prevent the arbitraging of capital between (and within) insurers and reinsurers operating in different jurisdictions.
- 4.11 While standards should be internationally consistent, they must recognize important national characteristics of the insurance industry. There are significant differences among jurisdictions in product design and in claims experience as well as in financial markets, including the supply and quality of financial assets available for insurance company investment; these must be taken into account by any local capital requirement. The treatment of asset related risks (in particular, credit risk and market risk) will depend upon the supply of available assets, the depth of local financial markets and the existence of measures of asset quality (perhaps as measured by rating agencies). Credibility of claims experience for establishing premiums, policy liabilities and capital requirements will depend upon the availability of local data. It would normally not be sufficient to use data from other jurisdictions. Such data normally are collected through inter-company studies carried out by the local industry association or by the local actuarial profession. The supervisor is urged to encourage the local industry and actuarial profession to create or expand industry-wide experience studies as a basis for establishing national valuation and capital requirements. The IAA will continue to foster the development of common international approaches in this regard.

4.12 Although the WP bases its work on principles in order to ensure universal applicability, the WP is aware that readers of this report would appreciate an illustration of how the report can be applied to arrive at concrete and explicit capital requirements. To this end, we have provided three case studies, for life, general (property and casualty) and health insurance. These case studies demonstrate how a capital requirement could be developed. The numbers contained in these case studies are for the purposes of illustration only and should not be taken as suggestions by the WP of explicit values that can be used in any local development of a capital requirement. The case studies are found in the appendices to this report.

4.3 Total Balance Sheet Approach

- 4.13 As described in the previous section, the application of a common set of capital requirements will likely produce different views of insurer strength for each accounting system used because of the different ways accounting systems can define liability and asset values. In the view of the WP, these definitions may create a hidden surplus or deficit which must be appropriately recognized for the purpose of solvency assessment.
- 4.14 The WP believes that a proper assessment of an insurer's true financial strength for solvency purposes requires appraisal of its total balance sheet on an integrated basis under a system that depends upon realistic values, consistent treatment of both assets and liabilities and does not generate a hidden surplus or deficit.
- 4.15 In addressing the solvency question, the WP has attempted to separate the issues of accounting from the questions of solvency. Accounting determines the financial progress from period to period. As such it gives greater emphasis to the annual profit and loss statement than does prudential regulation. While positive financial progress can be a very good "leading indicator" of future solvency, prudential regulation focuses on the balance sheet (i.e., the capacity of insurers to meet their obligations to pay the present and future claims to policyholders). In order to separate out the accounting issues, the WP believes that solvency would be better defined in terms of a "total balance sheet requirement" (i.e., the sum of both the liabilities and the solvency capital requirement). Using the total balance sheet requirement (TBS) allows solvency assessment to be relatively independent of the accounting system (although factor-based approaches will still require use of verifiable accounting values). One obtains the (solvency) capital requirement as the difference between the TBS requirement and the liability requirement determined on the basis of the accounting system. This implies that if the accounting rules for assets or liabilities differ, the requirements for capital may differ as well.
- 4.16 The WP understands that the IASB aims to develop an insurer financial reporting system whereby the total balance sheet is valued on an integrated basis using realistic values. The use of such a financial reporting system is intended to help readers of the financial statements to understand directly the elements of conservatism inherent in the financial statements. Equally, such an approach should enable insurer capital requirements to be better coordinated with the protection afforded within the policy liabilities (e.g., technical provisions or reserves).
- 4.17 However, since there is currently no international uniformity in accounting systems used by the insurance industry, the development of a global framework for insurer solvency assessment based on these current accounting systems is impossible. The WP has selected the TBS approach since it offers the most promise as the foundation for such a global framework. The TBS approach is relatively independent of the accounting system. Of course, standardized factor-based approaches will require use of verifiable accounting values and the degree of conservatism contained in these values should be taken into consideration as part of their determination.

4.4 Degree of Protection

- 4.18 As was discussed earlier in section 3.1.5 of this report, it is impossible for capital requirements, by themselves, to totally prevent failures. The establishment of extremely conservative capital requirements, well beyond economic capital levels, will have the impact of discouraging the deployment of insurer capital in the jurisdiction.
- 4.19 The WP considered the role of rating agencies in assessing insurers and the substantial volume of credit rating and default data available from these agencies. This data is helpful in identifying the rating classes that are indicative of insurers in difficulty. Further, the data is suggestive of the cumulative probability of default, over various time horizons, for different current ratings. The WP does not believe it is possible to directly link the solvency degree of protection to these ratings for a variety of reasons (e.g., different rating agency methodologies, different current credit ratings of insurers, etc.) but this information was helpful to the WP in forming its views on this matter.
- 4.20 As mentioned earlier in section 3.1.5, the degree of protection afforded by a set of capital requirements is dependent on the time horizon considered. In addition, as shown in section 4.5, the specific manner of applying the capital requirement risk measure may also affect the degree of protection chosen. The WP's recommendation for degree of protection is shown in section 4.5.

4.5 Time Horizon

4.21 As was discussed earlier in section 3.1.6 of this report, it is inevitable that there will be some time delay between the date the supervisor can take appropriate action with respect to an unacceptably weak or insolvent insurer and the date the published financial statements of the insurer are produced. During this period, it is likely that the company would continue operations. Therefore, a capital requirement must also provide for the company's business written during this time as well as being sufficient with respect to the existing business as of the statement calculation date.

Uncertainty

4.22 It is generally agreed that uncertainty risks (e.g., regarding the future levels of the best estimate mortality) must be considered for the full remaining term of the insurance contracts.

Volatility

- 4.23 On the other hand, some argue that volatility risks can be ignored in the long run, since these risks may be diversified away in the future (note that this is not universally true some elements of volatility risk cannot be diversified away). It is argued that the greater danger to solvency from the volatility component of risk may result not from long run exposure but rather the ability to withstand short-term volatility, perhaps within a one-year time frame.
- 4.24 This suggests that the choice of the time horizon per risk should depend on the issue of whether the risk at hand could be considered as "systematic" or "diversifiable." However, the WP has strong doubts whether all types of risks can clearly be classified into one of these two categories in practice¹. Many types of risks may have both systematic and diversifiable components. Moreover, this distinction may also depend on the size of the company and the character of the market(s) in which it operates.

¹ The same doubts have been expressed in Section 5 of the IASB Draft Statements of Principles on Fair Value accounting.

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Extreme Events

4.25 The solvency assessment time horizon should be long enough to capture the impact of extreme events, should they occur, and all associated ripple or tail correlation effects associated with the extreme events.

Recommendation

- 4.26 In consideration of the above elements of discussion, the WP is of the view that a reasonable period for the solvency assessment time horizon, for purposes of determining an insurer's current financial position (Pillar I capital requirements), is about one year. This assessment time horizon should not be confused with the need to consider, in such an assessment, the full term of the assets and obligations of the insurer.
- 4.27 The amount of required capital must be sufficient with a high level of confidence, such as 99%, to meet all obligations for the time horizon as well as the present value at the end of the time horizon of the remaining future obligations (e.g., best estimate value with a moderate level of confidence such as 75%).
- 4.28 Due to the long term and complex nature of some insurer risks, the insurer should consider valuing its risks for their lifetime using a series of consecutive one year tests with a very high level of confidence (say 99%) and reflecting management and policyholder behaviour (but no new business). Alternatively, this test can be conducted with a single equivalent, but lower (say 90% or 95%), level of confidence for the entire assessment time horizon. This lower level of confidence over a longer time horizon is consistent with the application of a series of consecutive higher level one-year measures.
- 4.29 The assessment of an insurer's future financial position under Pillar II according to various adverse scenarios might reasonably include projected future financial positions for five years for life insurance and two years for general insurance.

4.6 Standardized and Advanced Approaches

- 4.30 The WP has considered a variety of approaches for determining a capital requirement. The optimal approach would result in a requirement that is determined separately for each insurance company so as to produce a capital value most appropriate for that company. The result of this approach would be a calculation of the company's economic capital. However, this approach can be labour intensive and may require a degree of technical sophistication that may be beyond many companies' abilities and resources even though it directly aligns the management of a company's risks with its measurement process.
- 4.31 It is more practical to begin from the other end of the spectrum with a standardized approach. Under a standardized approach, capital would be determined using the same calculations for all companies in a jurisdiction. For each source of risk, a standardized measure of a company's exposure to that risk would be multiplied by a standardized factor determined for the jurisdiction as a whole. The factors would be calculated to reflect the circumstances of the jurisdiction. Since this approach is meant to determine a minimum value for capital for all companies licensed to conduct business, the factors would be expected to be fairly conservative. Nevertheless, the standardized approach should not be in clear contradiction with the principles of economic capital and it needs to be applied thoughtfully to ensure that the factors do not lead to inadequate risk measurement processes within the company. The various sources of risk and methods of determining the factors required for them are described later in this report. A complete discussion of the standardized approach is contained in section 6.

4.32 For stronger, more technically able companies with effective risk management programs, it may be appropriate to introduce alternate methods for determining the capital required with respect to specific risks. There is a wide variety of possible alternate methods. These range from the use of company-specific risk factors based upon company experience to alternate calculation methods and to the use of risk and cash flow projection internal models. In general, methods that are more tailored to the circumstances of an individual company would be expected to produce lower capital requirements than would be calculated using the standardized approach. This is due to the conservative bias in the standardized factors, required by the need for the standardized approach to apply to all companies. Low capital requirements could be acceptable to the supervisor if there was assurance that the resulting capital value was appropriate and the insurance company had in place very strong risk management and controls. Advanced methods, including internal models, are currently in use within the insurance capital regimes in Canada and Australia. They are also used under the current Basel Capital Accord to determine the capital for market risk in banks' trading books of assets. Advanced approaches are discussed in section 7 of this report.

4.7 Total Company Approach

- 4.33 The WP's risk-based approach to required capital treats each source of risk separately. Initial capital amounts are determined for each of them. However, the task does not end with these calculations. There are numerous reasons why the proper capital requirement for a company is not the simple sum of the requirements calculated in respect of each of the risks to which it is subject.
- 4.34 Adjustments to the simple sum of individual risk-based capital amounts may be required because of concentration of risks, diversification of risks, or dependencies among risks. The concept of correlation between risks is often introduced in connection with these elements.
- 4.35 The WP suggests that a company's total capital requirement should recognize the relationships among the various sources of risk that can affect its operations. Therefore, the simple sum of individual risk-based components should be adjusted appropriately. This topic is discussed more fully in sections 6-8.

4.8 Implementation Issues

4.36 There are many requirements for the introduction of a detailed risk-based solvency system for the supervision of insurance companies. Many of these, such as the legal framework, the accounting framework, and the business environment are outside the scope of the WP's charge. The WP understands that the IAIS has prepared and continues to develop guidance on these and related matters. There are, however, a number of practical implementation issues upon which the WP offers comment.

4.8.1 Data

4.37 Determining numerical factors in the standardized approach, or alternate methods in the advanced approaches, will be based upon extensive data covering the experience of the insurance industry in the local jurisdiction. Some of this data may have been collected by the supervisor through regular filings of required information. Other necessary data may have been collected by the industry trade associations. In many jurisdictions, the actuarial profession conducts regular intercompany studies of industry experience under insurance policies. Experience shows, however, that it may be necessary to conduct special-purpose data collection exercises for the purpose of calibrating a capital requirement. This can be a difficult though necessary undertaking that requires considerable planning.

4.8.2 Rating Agencies

4.38 Assessing credit risk with respect to specific assets usually involves consideration of the rating assigned to an asset by a leading rating agency. The WP recognizes that rating agencies may not operate in or cover the assets of all jurisdictions. If agency ratings are not available, the supervisor will require an effective local substitute.

4.8.3 Availability of Qualified Professionals

4.39 Determining a capital requirement, as well as assessing the results when this requirement is applied to the insurance industry, is a technically sophisticated matter requiring the skills of trained professionals, including actuaries. Supervisors may have the necessary personnel on their own staff. Supervisors may be able to recruit assistance from the local professional body or industry, or they could use the services of consultants, local or foreign. It is important that those who undertake to determine the details of a risk-based capital requirement have a sufficient knowledge of risk, statistics, finance and business.

4.9 Available Capital

- 4.40 A capital requirement is used to specify a minimum amount of capital that an insurance company must have. However, a statutory capital standard would be incomplete unless it specified what capital instruments a company could use to satisfy the requirement. This is the question of available capital.
- 4.41 The WP notes that the IAIS is currently developing guidance on available capital. Our understanding is that this guidance will use a tiered structure similar to that in the Basel Capital Accord. While the WP endorses convergence in this regard, careful consideration may need to be given to unique aspects of the insurance business which may require some modification of the banking approach.

5. Insurer Risks

5.1 Risk Fundamentals

- 5.1 The overall management of an insurer includes:
 - the design, pricing, marketing and underwriting of its insurance policies;
 - the selection of assets backing the policies;
 - the estimation of the size and volatility of the liabilities associated with those policies;
 - the determination of the insurer's capital needs;
 - claims management;
 - the updating of all these elements over time as more data and other information becomes available or because the underlying risk processes change;
 - an adequate/sound disclosure/communication process to key stakeholders (e.g., management, supervisors, policyholders and investors);
 - future financial condition analysis which provides a prospective multi-scenario view of the company as a whole.
- 5.2 These steps in the overall management of an insurer are illustrated in the following diagram, similar to the one used by the Australian Institute of Actuaries to describe the "actuarial control cycle." The diagram illustrates that the operations of an insurer are bounded by the business environment in which it operates (e.g., legal, social, competitive, client, economic, governmental, tax, etc.) as well as the professionalism of all its employees.


- 5.3 Risk is inherent in each of steps pictured in the diagram. The assessment of these risks is key to the operations of an insurer. Since actuaries specialize in the financial measurement and management of risk and contingent events, it is natural that actuaries can be of assistance in the assessment of risk, at many points of the "actuarial control cycle."
- 5.4 It is important to note the central role of capital in the above diagram. Capital represents an essential buffer to ensure that policyholder obligations can be met. The operations of an insurer, after the net effect of all their inherent risks, must yield a rate of return deemed reasonable by the providers of the insurer's capital. If additional capital is required, beyond that needed for all of the appropriate risk factors at an adequate level of confidence (e.g., 99% confidence level), then (in an efficient market) less capital will be attracted to the insurance sector if the insurance products cannot be priced to recover the additional cost of capital. On the other hand, insufficient requirements, in comparison with that deemed necessary by modelling all of the appropriate risk factors at an adequate level of confidence, may result in inadequate pricing and will increase the exposure of the insurer, over time, to the risk of insolvency.

5.1.1 Definition of Risk

5.5 Throughout this report reference is made to risk. Because of its importance to this report, it is useful to understand clearly the definition of risk. There are many different definitions of risk but a useful one was published in 1995 by Standards Australia and Standards New Zealand when they released a Standard on Risk Management (ASNZS 4360:1995). Included in that Standard is the following definition of risk.

"*Risk* – the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood."

5.6 This definition implies that risk may entail both upside as well as downside impacts. This concept is reinforced later in the Standard.

"Risk management is as much about identifying opportunities as avoiding or mitigating losses."

5.7 Risk only has meaning in the context of a set of objectives or expected results. For example, we might expect the value of automobile insurance claims from a given portfolio of business to be a certain amount. In reality, the actual amount of claims may differ because of the presence of various risks. Appendix G contains a high-level layperson's example of the importance of risk to an insurer.

5.1.2 Introduction to Insurer Risk Types

- 5.8 While the WP recognizes that insurer risks include many internal dependencies that require an integrated approach to risk or solvency assessment, the WP suggests that insurer risks be categorized under four major headings:
 - Underwriting
 - Credit
 - Market
 - Operational
- 5.9 While each risk is listed as if it existed in isolation, independent of the other risks, there are situations, as occurs in life insurance, where products are specifically designed and then managed with the asset and liability risks modelled together in an integrated fashion. In addition, there are other important considerations for combining the impact of the various risks across the whole company. The "Sharma" report, commissioned by the EU insurance supervisors, studied a number of insurance company failures or near failures and concluded that the final cause for a

failure is always a realization of some concrete risk, but in most cases the real cause is much earlier and more abstract. The "Sharma" report introduced the concept of a "causal chain" of events leading to failure.

- 5.10 Specific insurance risks that are covered by the company through the insurance contracts it sells are specifically identified as underwriting risks. The other risks are generally present (to different degrees) in other financial institutions. For example, market risk is generally associated with changes in the values of invested assets.
- 5.11 The WP recommends that capital requirements against asset related risks (e.g., credit and market risks) need not be determined for free assets, those assets which are not supporting the liabilities or the capital requirements themselves. The imposition of capital requirements on these free assets discourages insurers from maintaining more capital than absolutely necessary in the insurer. The imposition of such requirements is therefore counterproductive in enhancing the protection of policyholders.
- 5.12 The WP notes that liquidity risk is frequently associated with the sale of assets, although the underlying cause of a liquidity situation may not be due solely to market risk. The WP recommends that liquidity risk be addressed within Pillar II rather than Pillar I capital requirements (see appendix D for additional commentary).
- 5.13 The WP uses the common definition of "operational risk" which includes non-underwriting risk losses internal to the insurer (over which the insurer may have significant control) as well as those that are caused by external non-underwriting risk events (i.e., "event" risks over which the insurer may have little control). The WP recommends that operational risk be eventually addressed, at least partially, within Pillar I capital requirements.
- 5.14 Each major category contains several more specific risks, which are described in more detail, later in this section.

5.1.3 Key Components of Risk

5.15 In modelling risk, actuaries pay special attention to the following key components of risk for each peril. The modelling tools described later will need to reflect the following components of risk resulting from each peril.

Volatility

- 5.16 Volatility is the risk of random fluctuations in either the frequency or severity of a contingent event, such as the risk that the rolling of one die will be different from its expected (or average) result of 3.5. This risk is "diversifiable," meaning that the volatility of the average claim amount declines as the block of independent insured risks (or the number of rolls of the die) increases.
- 5.17 In fully efficient markets, volatility would not be valued in the calculation of the fair value of a set of projected future cash flows. Only capital would be used to absorb the fluctuations arising from volatility risk. This efficient market pricing theory is based on an investor's point of view, whereby the risks in their own portfolio can be diversified. However, because of the relatively inefficient markets for valuing insurance risks, the volatility component of risk cannot be ignored, since policyholders usually cannot diversify that risk away. An insurer can go in to bankruptcy because of diversifiable risk and the policyholders should be protected against that risk.

Uncertainty

- 5.18 Uncertainty is the risk that the models used to estimate the claims or other relevant processes are misspecified or that the parameters within the models are misestimated. Uncertainty risk is non-diversifiable since it cannot be (relatively) reduced by increasing portfolio size.
- 5.19 Using the die example above, if the die actually has two 5's on it and no 6 (or a different number of sides), then the estimate of 3.5 based on a "normal" die has misspecified the expected value. Since insurance companies often have unique underwriting standards and market niches, they may be expected to have their own unique parameters. Thus, actual experience observed for one group may not be indicative of the future experience for another group and the experience of the whole population may not be appropriate for an individual company.
- 5.20 Included in uncertainty are three key elements:
 - 1. The model itself may be incorrect (i.e., no parameters may exist that make the model an adequate description of reality). This is usually referred to as "model error" risk. This can occur when the distribution itself is misunderstood (such as the actual process may be lognormal and one assumes it is normally distributed) or when a key driver or relationship is wrong. However, this introduction of model error may be a deliberate choice in order to have a simpler, more usable model, with an acceptable error tolerance.
 - 2. Even if the model of a cash-flow process is correct, and the underlying model is appropriate, the parameters need to be estimated. Parameter risk is the error in this estimation, which exists because
 - the number of observations on which best estimates are based is limited because the observation period is too short
 - the volatility of the observations makes estimation less certain
 - the period over which the observations were made may not include certain calamitous events that, in fact, should be reflected in the parameters of the distribution
 - the observations contain contaminated data.
 - 3. In addition, the risk structure (i.e., parameters) can change over time or be uncertain for other reasons. This too needs to be considered in modelling the risks. Sometimes called structural risk, examples of this include a new court ruling that changes the interpretation of policy language, a new medical breakthrough (cure for cancer), or a new disease (AIDS). This risk is sometimes incorporated into the model through "structural" distributions of parameters.
- 5.21 For example, all of these uncertainty elements contribute to estimating the likelihood of an earthquake in the New Madrid area of the United States (St. Louis to Memphis along the Mississippi River). A significant uncertainty relates to whether such an earthquake is a 1 in 100-year event or a 1 in 1,000 or higher year event.

Extreme Events

5.22 Extreme events have also been described as high-impact, low-frequency events for the company as a whole. For any risk, one or more extreme events can cause fluctuations to be much greater than might be expected to arise from normal (modelled) fluctuations under items 1or 2 above. These are one-time shocks from the extreme, adverse tail of the probability distribution that are not adequately represented by extrapolation from more common events and for which it is usually difficult to specify a loss value, and thus an amount of capital to hold. For example, a contagious disease process may affect many persons simultaneously, nullifying the usual assumption of independence among persons; or, a rumour or dramatic public statement might lead to a severe liquidity shortfall scenario at an insurance company. Another possibility is that an event occurs

which has an extremely low probability of occurrence. Using the dice example again, there would be a very low chance that two dice end up leaning against each other with no clear result of the roll.

5.23 The risk of extreme events, beyond normal volatility of cash flows, needs special consideration since the resulting fluctuations may be so extreme as to require independent management strategies.

5.2 Types of Risks

5.2.1 Underwriting Risk

- 5.24 Insurance companies assume risk through the insurance contracts they underwrite. The risks within the underwriting risk category are associated with both the perils covered by the specific line of insurance (fire, death, motor accident, windstorm, earthquake, etc.) and with the specific processes associated with the conduct of the insurance business. The WP has chosen not to list all the specific hazards, but rather to focus on more generic risks that apply to all (or at least many) lines of insurance:
 - Underwriting Process Risk- risk from exposure to financial losses related to the selection and approval of risks to be insured
 - Pricing Risk- risk that the prices charged by the company for insurance contracts will be ultimately inadequate to support the future obligations arising from those contracts
 - Product Design Risk- risk that the company faces risk exposure under its insurance contracts that were unanticipated in the design and pricing of the insurance contract
 - Claims Risk (for each peril)- risk that many more claims occur than expected or that some claims that occur are much larger than expected claims resulting in unexpected losses. This includes both the risk that a claim may occur, as well as the risk that the claim might develop adversely after it occurs
 - Economic Environment Risk- risk that social conditions will change in a manner that has an adverse effect on the company
 - Net Retention Risk- risk that higher retention of insurance loss exposures results in losses due to catastrophic or concentrated claims experience
 - Policyholder Behaviour Risk- risk that the insurance company's policyholders will act in ways that are unanticipated and have an adverse effect on the company
 - Reserving Risk risk that the provisions held in the insurer's financial statements for its policyholder obligations (also "claim liabilities," "loss reserves" or "technical provisions") will prove to be inadequate.
- 5.25 Appendices A, B and C of this report provide detailed descriptions of the considerations involved in assessing underwriting risk in life, non-life and health insurers through case studies.

5.2.2 Credit Risk

5.26 Credit risk is the risk of default and change in the credit quality of issuers of securities (in the company's investment portfolio), counter-parties (e.g., on reinsurance contracts, derivative contracts or deposits given) and intermediaries, to whom the company has an exposure. Within this category, we include:

- Direct Default Risk risk that a firm will not receive the cash flows or assets to which it is entitled because a party with which the firm has a bilateral contract defaults on one or more obligations
- Downgrade or Migration Risk risk that changes in the possibility of a future default by an obligor will adversely affect the present value of the contract with the obligor today
- Indirect Credit or Spread Risk risk due to market perception of increased risk (i.e., perhaps because of the business cycle or perceived credit worthiness in relation to other market participants)
- Settlement Risk risk arising from the lag between the value and settlement dates of securities transactions
- Sovereign Risk risk of exposure to losses due to the decreasing value of foreign assets or increasing value of obligations denominated in foreign currencies
- Concentration Risk risk of increased exposure to losses due to concentration of investments in a geographical area or other economic sector
- Counterparty Risk risk of changes in values of reinsurance, contingent assets and liabilities (i.e., such as swaps that are not otherwise reflected in the balance sheet).
- 5.27 The table below relates market and credit risks of an insurer to the business segments where they are manifest.

Insurer Market & credit risks (IR=Interest Rate risk; FX=Foreign Exchange risk)			Invested assets			Insurance contract liabilities		
		Fixed income	Equity	Other (real estate, mortgages)	Cash	Insurance contracts	Reinsur- ance receivables	Embedded options
Market risk	Change in value due to economic factors	IR + FX markets	Equity + FX markets	IR + FX + market conditions	FX risk	IR + FX + Equity Markets (Products with large investment element)	Not applicable	Low likelihood asymmetric payout events
Credit risk	Change in value due to default or expected default	Default, loss of low-grade bonds	Not applicable	Economic cycles affect returns and values	Small	Not applicable	Default of reinsurer	Not applicable
Depende	ncies should be	e considered.	Example:	dependency b	etween r	narket shocks a	nd credit risk	ί.

5.28 Appendix E of this report provides a detailed description of the considerations involved in assessing credit risk for insurers.

5.2.3 Market Risk

- 5.29 Market risk arises from the level or volatility of market prices of assets. Market risk involves the exposure to movements in the level of financial variables such as stock prices, interest rates, exchange rates or commodity prices. It also includes the exposure of options to movements in the underlying asset price. Market risk also involves the exposure to other unanticipated movements in financial variables or to movements in the actual or implied volatility of asset prices and options. Within this category, are included
 - Interest Rate Risk risk of exposure to losses resulting from fluctuations in interest rates
 - Equity and Property Risk risk of exposure to losses resulting from fluctuation of market values of equities and other assets
 - Currency Risk risk that relative changes in currency values decrease values of foreign assets or increase the value of obligations denominated in foreign currencies
 - Basis Risk risk that yields on instruments of varying credit quality, liquidity, and maturity do not move together, thus exposing the company to market value variation that is independent of liability values
 - Reinvestment Risk risk that the returns on funds to be reinvested will fall below anticipated levels
 - Concentration Risk risk of increased exposure to losses due to concentration of investments in a geographical area or other economic sector
 - Asset/Liability Mismatch Risk to the extent that the timing or amount of the cash flows from the assets supporting the liabilities and the liability cash flows are different (or can draft apart) the insurer is subject to asset/liability mismatch risk
 - Off-Balance Sheet Risk risk of changes in values of contingent assets and liabilities such as swaps that are not otherwise reflected in the balance sheet.
- 5.30 Appendix D of this report provides a detailed description of the considerations involved in assessing market risk for insurers.

5.2.4 Operational Risk

- 5.31 The concept of operational risk has primarily emerged from the banking industry, and initially was defined in complementary terms, namely all risks other than market or credit. The Basel Committee on Banking Supervision (BCBS) has proposed a capital requirement for operational risk for banking institutions. In order to evaluate a capital requirement specific risks need to be identified and measured and this has led to the adoption of the definition that was initially developed by the British Banker's Association. Operational risk, for capital purposes, is defined as "the risk of loss resulting from inadequate or failed internal processes, people, systems or from external events".
- 5.32 The above definition is intended to include legal risks but exclude strategic, reputational and systemic risk.
- 5.33 In the banking industry thousands of transactions are processed each day. Therefore, the amount of data in respect of losses arising from operational failures is more abundant. This naturally lends itself to the development of frequency and severity models to evaluate the aggregate loss distribution and hence the capital requirement.
- 5.34 In the banking sector it is believed that credit accounts for 60% of all risk, operational risk is 30%, market risk is 5% and other risks represent the remaining 5%.

- 5.35 The Bank for International Settlements (BIS) has used Quantitative Impact Studies (QIS's) to gather operational risk experience. There appears to be insufficient data of the right type for a Pillar I requirement under Basel II at the present time.
- 5.36 The BIS will likely not increase the overall Pillar I target standard capital ratio of 8% to allow for operational risk since there is some belief that operational risk is already implicitly provided for in the setting of the 8% target standard ratio.
- 5.37 It appears likely that Basel II will require operational risk assessment within Pillar I. Banks will be offered the choice of "basic indicator", "standardized" and "advanced measurement approaches". Many banking supervisors require their banks to hold additional capital above Pillar I levels because of Pillar II issues.
- 5.38 Operational risk is also an important risk for insurers and it should be provided for in a multipillar supervisory framework. Operational risk has been recognized as an important risk for insurers as well as for banks (EU Supervisory "London Group" produced the Sharma Report that indicated management shortfalls led to many EU insurer failures).
- 5.39 However, because of the current general lack of sufficient insurer quantitative data (i.e., operational risk data gathering is less advanced than in the banks; nature of operational risk in insurers differs from that in banks because of the different nature of the businesses), there can be no <u>experience-based explicit</u> Pillar I requirement for insurers at this time. In the interim, a non-experience-based Pillar I requirement can be used but the WP recommends it be accompanied by incentives for companies to demonstrate sound operational risk management.
- 5.40 Due to the importance of operational risk in the causal chain of events leading to insolvency, the WP recommends that operational risk for insurers be addressed in Pillar I. It may be reasonable to offer a Basel II type of approach with a choice of a "basic indicator", "standardized" and "advanced measurement approach."
- 5.41 A challenge for insurers in assessing operational risk is to separate this risk from the loss experience data typically collected for the other underwriting, credit and market risks. For example, insurers will need to examine the portion of their "underwriting losses" that are really due to ineffective or faulty underwriting processes or client management.
- 5.42 It is recommended that insurance supervisors, the insurance industry and the actuarial profession work together to develop appropriate research to measure operational risk.

5.2.5 Liquidity Risk

5.43 Liquidity risk is inherent in the financial services industry. In an insurance context, liquidity risk is exposure to loss in the event that insufficient liquid assets will be available, from among the assets supporting the policy obligations, to meet the cash flow requirements of the policyholder obligations when they are due. In more general terms used in the financial industry, liquidity risk within insurance companies is called funding liquidity risk, as opposed to trading related liquidity risk that banking institutions face raising necessary cash to roll over their debt or to meet cash, margin or collateral requirements. An insurer should be aware of the potential liquidity risks associated with the early termination of insurance contracts. Losses due to liquidity risk can occur when a company has to borrow unexpectedly or sell assets for an unanticipated low price. The liquidity profile of a company is a function of both its assets and liabilities.

- 5.44 Life insurers often offer policyholders embedded options (e.g., settlement options) that have the potential to cause liquidity problems². General insurers occasionally have to pay claim settlements earlier than expected, thereby being required to liquidate invested assets prematurely or at unfavourable terms.
- 5.45 There are different levels of liquidity management³:
 - Day-to-day cash management, which is commonly a Treasury function within a company
 - Ongoing cash flow management, which typically monitors cash needs for the next six to twenty-four months.
 - Stress liquidity risk, which is focused on catastrophic risk.
- 5.46 It is important to recognize that stress liquidity risk management is distinct from asset/ liability management and capital management issues. It is therefore not generally covered by actuarial opinions and may not be included in normal measures of risk-based capital; rather, it is a separate and fundamental area of financial risk management.

Possible Sources of Liquidity Risk

- 5.47 Unexpected demand for liquidity may be triggered by,
 - cash calls following major loss events
 - a credit rating downgrade
 - negative publicity, whether justified or not
 - deterioration of the economy
 - reports of problems of other companies in the same or similar lines of business
 - extent of reliance on and performance of secured sources of funding and their terms (e.g., line of credit capacity and conditions)
 - breadth of funding and accessibility/liquidity of capital markets (e.g., through catastrophe bonds).
- 5.48 Other random fluctuations in demand for liquidity and certain company-specific characteristics can amplify liquidity risk. However, these characteristics by themselves may or may not cause liquidity failure. Good liquidity management can significantly reduce that risk. Examples of company-specific characteristics that can contribute to liquidity risk exposure include:
 - A single contract holder or a few contract holders who control large sums of money (policies or contracts). Institutional-type products are the biggest risk in this respect, although in retail lines, a small group of agents and/or brokers may control large blocks of business, and they pose a similar risk.

² The most striking example of loss due to this risk is a "run-on-the-bank" event that causes an institution to fail. This type of event hit banks during the Depression when too many customers demanded to have their money paid immediately in cash, and the demand exceeded the cash reserves. An illustration of the liquidity risk problems which can occur in the insurance industry, occurred on July 30, 1999, when an American insurer's credit rating was downgraded by a major rating service company. In the days following the downgrade, many investors invoked the seven-day redemption clause in the short-term funding agreements issued by the insurer. The funding agreements suddenly behaved like short-term liabilities despite the fact that the assets supporting them were invested for longer terms. The company was unable to sell assets quickly enough to meet these requests and voluntarily sought state insurance department supervision. The cause of these problems was a mismatch between the term of the liabilities (due to the seven day redemption option) and their underlying assets, which, because of a downgrade, led to a liquidity crisis.

³ Further reference material is available from the 2000 Report of the Life Liquidity Work Group of the American Academy of Actuaries to the NAIC's Life Liquidity Working Group. This report is available at the Academy website at www.actuary.org

- The size of the company may limit access to capital markets. If a company is too small, it may not have the funding choices available to larger companies. On the other hand, if a large company is forced to liquidate billions of dollars of assets at once, the marketplace may not be able to absorb the volume at fair value.
- Immediate demands for cash payments can be a risk if cash is in short supply. An unpredictable cash demand is a larger risk. If a funding agreement has a 7-day put option, the issuer has only one week to collect the cash needed to satisfy the obligation. A predictable cash demand is less of a risk. A well-managed company can structure its assets in such a way so that it has enough cash to cover the known obligations. GIC's with fully predictable payout dates and no surrender provision should have minimal liquidity risk in a well-managed company because the cash flows are predictable and planned for.
- Unpredictable deferred or deferrable demands on cash increase liquidity risk. However, the risk diminishes with longer deferral periods. For example, a cashable GIC contract may have a 90-day delay provision, which under normal circumstances gives the company a reasonable amount of time to access its liquidity sources.
- Insufficient ability to borrow short term through bank lines of credit, commercial paper, etc., increases the liquidity risk.
- Lack of diversity/fungibility in either the liability or the asset portfolio when analyzed by product, region, industry, creditor, etc. can create an over-concentration of illiquid assets, such as real estate or thinly traded securities, thus increasing the liquidity risk.
- Finally, liquidity risk can arise during a crisis in the capital markets. When market price moves become extreme, and their volatility increases dramatically, normal correlations break down. As investors begin to exhibit the same behaviour, assets can become non-tradable or illiquid.
- 5.49 In the case of a large U.S. life insurer that suffered a significant liquidity event, the event was triggered by a downgrade in its credit rating. The contributing factors to liquidity risk were large funding agreement contracts held by relatively few, sophisticated customers; these funding agreements contained 7-day put options. The ratings downgrade caused large amounts of GIC's to suddenly become cashable on very short notice.
- 5.50 The WP believes that liquidity issues in an insurer are typically triggered by difficult-to-predict events, frequently involving policyholder behaviour because of various operational risk events (e.g., ratings downgrade) and recommends that liquidity risk be subject to Pillar II rather than Pillar I assessment.

5.3 Risk Measures

5.51 Internal models produce probabilities of all possible outcomes of each component of the insurance company's risk that is included in the model. The sum of the outcomes of all risks combined is described as the "aggregate" outcome, usually measured as a "loss." The aggregate loss is described through a probability distribution, which measures the likelihood of all possible outcomes. A "risk measure" is a function of the probability distribution of losses. It is used to determine either the total capital requirement (based on the aggregate distribution of losses) or an indicated capital requirement for a component (based on the loss distribution of the component risk only).

- 5.52 The following diagram portrays a Normal (so named due to its distinctive shape) distribution of losses. This type of a distribution may reflect the statistical characteristics of some types of risks or be used as an approximation for other risks. This diagram displays the mean of the distribution as well as three types of risk measures, the standard deviation, Value at Risk (VaR shown on this diagram at the 95th percentile) and Tail VaR.
- 5.53 Specifically the definitions of these risk measures are:



- Value-at-Risk (VaR) is a quantile of the distribution. For example, the 95th percentile of the distribution is the value for which there is a probability of exceedence of 5%.
- Standard Deviation of the distribution is a measure of the degree of uncertainty.
- Tail-Value-at-Risk (TVaR) is the quantile VaR plus the average exceedence of that quantile if such exceedence occurs. For example, the 95% TVaR is the arithmetic average of all VaR's from the 95th percentile on.
- 5.54 In the next diagram, a skewed distribution is shown. This distribution features a "fatter tail" than the Normal distribution. Risks subject to infrequent but sizeable losses (perhaps catastrophic losses) have "fat tail" distributions. Many insurance risks have skewed distributions. Note the impact of the skewness on the three risk measures. The advantages of using TVaR as a risk measure for solvency assessment purposes are clearly shown in these diagrams since it is the only one of the three risk measures to indicate the amount of catastrophic losses above a certain confidence level.



5.55 As is the practice in many areas of financial risk management, it is often useful to begin with the assumption that losses form multivariate lognormal distributions. In many cases this will be a more appropriate assumption than the multivariate normal assumption in an insurance context.

5.4 Risk Management, Mitigation and Transfer

5.56 An insurer can take a number of steps to lessen the risk associated with its business. These include the purchase of reinsurance, securitization of a portion of its asset or liability portfolio, hedging of financial guarantees using derivative instruments, the use of product design to pass risk on to the policyholder, as well as active risk management. To the extent that these measures effectively reduce a company's risk, they should be given appropriate recognition in the calculation of a company's required capital. The difficulty lies in properly assessing the actual degree of risk that has been transferred from the insurance company in these arrangements.

5.4.1 Reinsurance

- 5.57 Reinsurance is a common way for insurers to manage their risk. In the case of reinsurance in the normal course of business, or indemnification reinsurance, the insurer retains the risks inherent in the original policies sold, while the reinsurer and insurer separately agree to exchange certain specified payments. This has the impact of transferring a portion of the insurer's risk for those policies to the reinsurer. Indemnification reinsurance can be structured to permit the policyholder to retain varying degrees of risk (e.g., via deductibles, coinsurance, captive reinsurance, retrospective premium arrangements etc.). The presence of a reinsurance contract exposes the insurer to the risk of counter-party default.
- 5.58 Reinsurance can be used to reduce volatility, uncertainty and extreme event risk. For example, some types of insurance can be structured to directly insure against catastrophic events such as earthquakes or hurricanes. They succeed by limiting or "spreading" the risk due to one event through the use of reinsurance to limit their exposure.

- 5.59 Reinsurance contracts can contain a variety of financial arrangements that specify which party holds actuarial reserves for the business being reinsured. It is important to recognize that where the liabilities are held may not fully indicate which party has the risk. It is also important to recognize that certain forms of reinsurance, generally labelled as financial or finite reinsurance, are actually structured to provide financing by reinsurers to direct writers with only a minimal transfer of real risk.
- 5.60 In some jurisdictions, reinsurers are subject to regulation and supervision similar to that applied to direct writing companies. Also some jurisdictions require foreign reinsurers, though not directly regulated by the jurisdiction, to maintain sufficient funds locally to support the business they have assumed within the jurisdiction. In both these circumstances, the WP believes it is appropriate to grant credit within a capital requirement to an insurer that has passed on some of its risks through reinsurance. However, this granting of credit should be conditional upon verification that a real transfer of risk has taken place. In addition, the capital credit must recognize the counterparty risk being assumed by the direct writer.

5.4.2 Hedging

- 5.61 Hedging transactions result in a net reduction in risk as the insurer assumes an offsetting risk to one it currently holds. The insurer still retains the original risk but the offsetting hedging transaction results in a net reduction in risk for the insurer. It is important to note that the insurer assumes additional counter-party default risk as a result of the hedging transaction unless the hedge is a "natural" hedge. A natural hedge occurs when a company can offset risks in different lines of business. For example, writing both life insurance and life contingent annuities for similar groups of policyholders may help to provide a hedge against the impact of improving mortality.
- 5.62 Recognition of natural hedges introduced when an insurer writes complementary lines of business, can be introduced at the company-wide level once the various individual risk components of a capital requirement have been calculated.
- 5.63 Financial hedges involving the use of derivative instruments are used by some insurance companies to offset certain financial guarantees (with respect to interest rates or equity markets) that they have given to their policyholders. Before granting credit for financial hedging in a capital requirement, the supervisor should be comfortable that the company's hedging program is well formulated, is consistent with financial economic theory and effectively provides the desired hedge. The supervisor might also require assurance that financial markets offer a sufficient supply of the required derivative instruments and that the company's personnel executing the hedging strategy are competent and knowledgeable concerning financial economics. Financial hedges will usually be used only by more sophisticated companies. Credit for these programs within a capital regime will depend upon the demonstrated effectiveness of the program. This is likely to be possible only when internal models are being used to determine capital requirements for the risk that is being hedged. The WP does not propose to include an adjustment for hedging in the standardized factor-based approach, recognizing that the inability to adjust for hedges (or other market-driven risks) is an important shortcoming of standardized factor-based approaches.

5.4.3 Participating Insurance

5.64 Many insurance policies, particularly life insurance, are sold on a participating or with-profits basis. Under these contracts, the insurance company's experience with respect to this block of business is shared with policyholders through the payment of a policyholder dividend or a bonus; the dividend can take several forms including a cash payment, a credit towards the next premium or an additional amount of paid–up insurance. The argument is made that if a company's

experience with respect to participating business is unfavourable, then it can pass that bad experience on to its policyholders through a reduction in the bonus or dividends.

- 5.65 In addition, some companies offer policies that contain adjustable or non-guaranteed policy elements. These elements may include premiums, interest credited to the policyholder's account, or charges against the policy for mortality or expenses. Policies often contain limiting values that place constraints upon the company's ability to freely adjust values. For these policies, adjustments can only be made to future policy values. There are also policies, more in the nature of investment contracts, where the investment earnings credited to a policyholder are directly related to a financial index or the return on a designated portfolio of assets.
- 5.66 The WP suggests it would be appropriate to grant some credit within a capital requirement for risks that are passed through to, or shared with, policyholders under the various mechanisms described above. However, this credit should only be given when the supervisor is satisfied that the insurance company has in place a policy and practice of reducing the dividend or bonus scale or adjusting policy elements in its favour when it is subject to adverse experience. This satisfaction should be based upon explicit demonstration by the insurer of its policies and practices. Moreover, the supervisor should also be satisfied that the constraints placed upon insurers by the concept of "policyholders' reasonable expectations" with respect to participating policies, or the limits within adjustable policies, do not interfere with the company's ability to share unfavourable experience with policyholders consistent with its policies and past practices.
- 5.67 Since the determination of an unfavourable shift in experience may require a significant amount of time, and since reluctance has been observed on the part of many insurers to reduce bonus or dividend scales very quickly, it is not appropriate to allow complete credit for risk generated through participating or adjustable policies.

6. Standardized Solvency Assessment

6.1 Introduction

- 6.1 This section outlines the key considerations that should be considered in designing and selecting a standardized solvency assessment approach for Pillar I insurer capital requirements. The determination of a specific set of requirements for a given jurisdiction should be developed in accordance with these considerations.
- 6.2 As stated earlier, the optimal approach to assessing insurer capital requirements would result in a requirement that is determined separately for each insurance company so as to produce a capital value most appropriate for that company. This approach can be complex, involve the extensive development of company-specific risk models and could require a degree of technical sophistication that may be beyond the abilities and resources of some insurers or jurisdictions.
- 6.3 Consequently, it may frequently be more practical to begin from the other end of the spectrum with a standardized approach. A family of standardized approaches is possible, ranging from the simplest and most objective approaches (e.g., set of risk factors common for a jurisdiction that could be multiplied by a company's relevant exposure amounts) to more complex formulaic approaches, which permit some use of an individual company's experience.
- 6.4 The standardized approach must be designed and calibrated to reflect the circumstances of the jurisdiction. In so doing, the key principles of insurer solvency assessment must be respected to the greatest extent possible. Since this approach is meant to determine a minimum value for capital for all companies licensed to conduct business, the factors would be expected to be fairly conservative. It is important to recognize that while a standardized approach may ease the burden of annual computation on each company, considerable research, analysis and fitting of the standardized approach selected will be required at the outset of the new approach by the jurisdiction itself and on an ongoing basis as new product and market risks evolve over time.

6.2 Range of Standardized Approaches

- 6.5 The design of a standardized approach begins with recognition that the risks assumed by an insurer have identifiable characteristics. Frequently, risks can be analyzed by their frequency and severity (and even in cases where claim incidence and cost cannot be separately estimated with any confidence, the alternative aggregate loss estimate is a proxy for "frequency x severity"). The combination of frequency and severity results in losses whose distribution (either probability or cumulative loss) is of interest in solvency assessment. In particular, the tail of the distribution is important for solvency purposes.
- 6.6 The most simple standardized approaches would apply a factor or scale of factors to an exposure amount. These factors would be designed to provide for the tail of the distribution. For example, mortality risk could be provided for by multiplying a factor or scale of factors by the exposed amount at risk. Of necessity, such a simple approach attempts to combine volatility, trend, level and catastrophic risk for all products for all companies into one factor or scale of factors.
- 6.7 Somewhat more complex standardized approaches identify many more components of insurer risk for separate determination of a capital requirement. Additional complexity can be added to allow for risk concentration and diversification. Once again, such approaches apply industry wide norms that will not reflect an individual company's specific circumstances. Of necessity, a conservative approach to factor setting will be required. While adding many more risk components to the standardized approach may help to better assess the dimensions of an insurer's solvency position, the increased complexity may result in spurious levels of perceived accuracy.

- 6.8 Some of the more complex standardized approaches begin to approach the accuracy of companyspecific internal risk models in assessing risk. For example, some approaches would allow the insurer to input their expected frequency and/or severity data into a standardized computational model. Also input to the model would be jurisdiction specific parameters relating to the shape of the respective frequency and severity distributions. These inputs might be provided by the supervisor.
- 6.9 In building a standardized approach, appropriate recognition needs to be taken of risk dependencies. The simplest approach involves building a correlation matrix between risks. A conservative approach would allow for full correlation between risks. The company's aggregate risks would then be determined by adding together all of the individually determined capital requirements. In reality, there is frequently some degree of (but less than full) correlation between risks and the impact of correlation on the company's aggregate risks can be quite significant.
- 6.10 It should be remembered that for some risks, a factor-based approach will not work due to the uniqueness of the risks covered from company to company, the difficulty in defining a loss distribution or the importance of infrequent yet catastrophic losses. In these situations, other tools besides factors (or in addition to factors) will need to be implemented.

6.2.1 Development of a Standardized Factor-Based Approach

- 6.11 A standardized factor-based approach requires calculating the products of measures of risk exposures and specified factors. The results are summed with an adjustment to the sum to recognized dependencies, diversification, hedging, matching and other risk interactions. This allows for risk reduction methods to be recognized directly. Two approaches are described in the following paragraphs.
- 6.12 The first standardized approach for a set of risks can be described through a probability distribution of the amount of funds required to support the specified future liability associated with the set of risks. Setting the requirement at a level that provides a high probability of solvency (say 99%) requires determining the quantile (e.g., the 99th percentile) of the distribution of the amount of funds required. This quantile can always be described in terms of the mean and standard deviation of the distribution as $\mu + k\sigma$, where μ represents the mean or expected loss outcome and σ represents the standard deviation or volatility of loss outcomes. The quantity k is a factor that varies depending on the quantile chosen and the shape of the distribution of loss outcomes. For example, if the distribution is Normal (Gaussian), and the solvency standard is 95% then k is 1.64; if it is 99% then k is 2.33. If the distribution is different from Normal, then k is also different. The factor k may be increased to add a greater safety margin if the distribution has a heavier tail than the Normal or if there is additional uncertainty about the mean and variance. The factor k will vary by type of insurance company. Heavier tails will require larger values of k. For example, a life reinsurance company with only short term mortality risk coverages, will likely have a distribution that is not very different from Normal. On the other hand, a general (property/casualty) insurer may have a distribution that is much heavier in the tail due to the greater possibility of extremely large losses as a result of the characteristics of the individual underwriting risks or because of high correlations amongst risks. Thus for property/casualty insurers, k would be expected to be larger.
- 6.13 A second approach would be to approximate the distribution of the insurer's amount of funds with a specific distribution (e.g., lognormal) and calculate the measure of risk (such as TVaR) at the desired confidence level (say 99%) to determine the total balance sheet requirement.

- 6.14 Under the first standardized approach, the mean μ is considered to represent the best estimate liability while the $k\sigma$ represents the total capital requirement. This reflects the total balance sheet approach recommended in this report. Note that any amount of conservatism that is built implicitly or explicitly into the statutory or GAAP financial statements (when the reserve is higher than μ) should be recognized as "hidden" capital since it partly protects the company against adverse outcomes. Under the second approach, the observed μ , σ and any other parameters can be used to estimate the parameters of the specified distribution from which the risk measure is derived.
- 6.15 The discussion in the last paragraph can be applied at the level of product, risk type or line-ofbusiness (LOB) level in the company. Under the first approach, if the LOB's are labelled using subscripts, then the total balance sheet requirement c_i for LOB_i can be rewritten as

 $c_j = \mu_j + k_j \sigma_j$. Note that all three elements are specific to LOB_j. The factor k_j can then be made specific to LOB_i.

- 6.16 The capital requirement for LOB_j is then $k_j\sigma_j$. If this is normalized by the expected losses, the capital requirement is $c_j = \mu_j k_j v_j$ where v_j is the coefficient of variation (CoV) or the ratio of the standard deviation to the mean. The capital requirement can be written as the product of three terms since:
 - 1. μ_j representing the expected losses an "exposure" measure unique to the company and must be calculated by the company;
 - 2. k_i is specific to the LOB and not the company, and can be prescribed by the supervisor; and
 - 3. v_j depends on both the LOB and the size of the LOB for the company, and can be designed with the option of having a formula reflecting industry characteristics for the LOB and incorporating the company's size.
- 6.17 It should be noted that the exposure measure can be based on simple quantities such as premium volume or be based on more complex probability models reflecting frequency and severity. The capital requirement formula must reflect all future contractual obligations of the company (i.e., not only already incurred or outstanding claims but those that are expected in the future from existing contracts).
- 6.18 One of the challenges to be faced in developing any standardized approach is that the unintended consequence of its actual operation may be counterproductive to its intended effect. For example, a standardized approach that seeks to multiply gross premiums by a factor, while well intended, also has the effect that an insurer seeking greater financial soundness is actually penalized for increasing the profit margins in its premiums. In a similar fashion, a standardized approach which relies on statutory or GAAP (rather than best estimate) liabilities will inadvertently increase a company's capital requirement in the event that it selects a more conservative (i.e., not due to underlying experience) reserving basis. Both of these examples represent the difficulties in designing standardized approaches that remain faithful to the core principles for solvency assessment as laid out in this report.

6.19 The capital requirements of the LOB's need to be combined into a single capital requirement for the whole company. Simply adding them together will fail to recognize possible diversification between them. The formula,

$$c = \sqrt{\sum_{j} c_{j}^{2} + \sum_{i \neq j} \rho_{i,j} c_{i} c_{j}}$$

allows for diversification of risks, where $\rho_{i,j}$ represents the "correlation" between LOB_i and LOB_j. If the correlations are all equal to 1, then the formula is equivalent to summing all the capital requirements for the LOB's. If the LOB's are all mutually independent, then full diversification is possible and the correlations are all equal to 0 and the second term under the square root sign becomes zero. In practice the correlations between LOB's need to be estimated or prescribed. For example, if it is recognized that there is a strong correlation between two risk types (e.g., yields on bonds and yields on mortgages), then the supervisor could prescribe that a specific correlation between two LOB's is felt to be negative (e.g., annuity mortality and life insurance mortality), the supervisor could prescribe a correlation of 0 to be used so that additional conservatism be incorporated into the formula. In general, it is recommended that the correlation between all pairs of risk types be estimated.

- 6.20 This "correlation" need not be the standard linear correlation found in statistics textbooks. In particular, it could be a "tail correlation" to incorporate the possibility of simultaneous adverse outcomes in more than one LOB. It can also reflect the choice of "risk measure" used. If the risk measure places greater emphasis on adverse outcomes, then the correlation will be larger than otherwise. The appendices to this report include more technical material supporting the development of correlation formulas.
- 6.21 Under the second standardized approach each μ_i and σ_i can be used to calculate the mean, μ , and standard deviation, σ , of the amount of funds for the entire insurance company with the following formulas.

$$\mu = \sum_{j} \mu_{j}$$
$$\sigma = \sqrt{\sum_{j} \sigma_{j}^{2} + \sum_{i \neq j} \rho_{i,j} \sigma_{i} \sigma_{j}}$$

 μ and σ can be used to parameterize a particular (e.g., lognormal) distribution and the final capital requirement will be equal to the selected risk measure (e.g., TVaR(95)) minus the liabilities.

6.3 Underwriting Risk – Life Insurance

6.22 In assessing underwriting risk for an insurer, the basic principles for determining a standardized approach apply as laid out in the section above. However in "drilling down" into any layer of detail, there are distinctive characteristics of the various areas of life insurance that may require special consideration. This section describes some of the special considerations involved in developing standardized approaches for underwriting risk within the life insurance business.

- 6.23 Some of the special considerations of life insurance, which require consideration in the development of any standardized formula, include the following:
 - heterogeneity of risk (even within established "classes" of insurance business)
 - importance of mortality/morbidity, lapse and expense (underwriting) risks
 - substantial effects of correlation between different underwriting risks
 - long-term nature of the majority of the business
 - significant role played by reinsurance (especially in relation to concentration of risk)
 - difficulty in modelling policyholder behaviour for some products
 - importance of adjustable product features in some products (e.g., participating or with-profits policies, etc.)
- 6.24 Any standardized approach for life insurance will need to take account of these characteristics and will require the classification of all life insurance business in each supervisory jurisdiction into defined product types the level of detail in the definition effectively being in the control of the supervisor in the jurisdiction under consideration.

6.3.1 Mortality Risk

- 6.25 In this section an overview is provided of some of the standardized approaches that can be used to calculate capital for mortality risk. Several techniques for calculating the capital requirement for the key risk components of mortality for a life company are proposed below and, where possible, practical standardized measures will be recommended for their estimation. The mortality risk components are
 - volatility
 - catastrophe
 - trend uncertainty
 - level uncertainty
- 6.26 For illustrative purposes, the risk measure used is VaR with a degree of protection set at 99.5% for these approximations. As noted earlier in this report, the WP recommends the use of consistent measures of risk such as TVaR. However, in this example, there is only a small difference in the results between the VaR and TVaR measures with appropriately adjusted confidence levels. The degree of protection has been chosen solely for illustrative purposes. The WP recommendations for degree of protection and its relationship with the risk measurement time horizon are discussed earlier in this report.
- 6.27 In the models below, the expected mortality claim level or risk premium *RP* is:

$$RP = \mu = \sum_{i} q_i X_i$$

where q_i and X_i are the mortality rate and amount of insurance for the *i*th insured person. In general it is assumed that the number of deaths are Poisson distributed. The total claim level is Compound Poisson distributed.

6.28 This means that the standard deviation σ and the skewness γ of the distribution can be found in the following way:

$$\sigma = \sqrt{\sum_{i} q_{i} X_{i}^{2}}$$
$$\gamma = \frac{\sum_{i} q_{i} X_{i}^{3}}{\sigma^{3}}$$

Volatility

- 6.29 Traditional volatility risk is often calculated using a simulation model with many scenarios generated based on parameter input(s) into a Monte Carlo process. A good alternative is an analytical approach, the Normal Power approximation, using the first three moments of the Compound Poisson distribution. This approach will be less (computer) time-consuming than simulation models.
- 6.30 The capital at a 99.5% confidence level in the Normal Power approach is: $c_{volatility} = \sigma(2.58 + 0.94\gamma)$

In this case, the value of k is $2.58 + 0.94\gamma$ at the 99.5% level of confidence.

6.31 Under typical circumstances this approach can be further simplified. With # as the number of insured risks and the average q_i is around 0.0025 the capital can be calculated as follows:

$$c_{volatility} = (\frac{77.4}{\sqrt{\#}} + \frac{942.7}{\#})\mu$$

Volatility example

6.32 Three portfolios are used to test these methods. The three portfolios have each their own characteristics.

Portfolio 1:	Typical distribution of sums assured, typical age distribution
Portfolio 2:	Distribution skewed to high sums assured
Portfolio 3:	Typical distribution but a rather small portfolio

Portfolio	Number insured(#)	Max insured/ average	Skewness
1	125,970	11.6	0.13
2	60,777	40.3	0.77
3	24,570	14.7	0.38

6.33 The results for the volatility capital are (% Risk Premium):

Portfolio	Simulation	Normal Power
1	22.7%	22.8%
2	69.9%	68.1%
3	57.2%	57.4%

6.34 Assuming that reinsurance caps the individual sum at risk at 1,000,000 the volatility gives the following results:

Portfolio	Simulation	Normal Power
1	22.9%	22.8%
2	37.9%	37.6%
3	56.6%	55.8%

6.35 These results indicate that the Normal Power approximation provides results that are highly accurate when compared with results based on simulation. Therefore, this approximation can be used in establishing a capital requirement for this component of mortality risk.

Catastrophe

- 6.36 Beyond "normal" random fluctuations (volatility) in mortality experience from one period of time to the next, extra capital is needed for extreme events that result in high positive deviations in the claim level. These events can be caused by
 - severe epidemic (e.g., Spanish Flu in 1918)
 - natural catastrophe (e.g., earthquake)
 - terrorist attack (e.g., events of 9/11)
- 6.37 Due to a lack of data it is difficult to model this kind of risk and a very simple approach may be the most useful and appropriate. The capital for catastrophe risk can, for example, be based on portion of the expected number of deaths during one year. Based on the experience of the Spanish Flu epidemic, a doubling of one year's expected deaths may be appropriate.

Level Uncertainty

- 6.38 Level uncertainty is caused by the volatility observed in the past. This can make it difficult to estimate the "real" or "true" current average mortality. The same kind of model as in the volatility risk can be used to calculate this risk. However, the potential impact on the liability must be determined because level uncertainty involves the misestimation of the mortality assumption for all future years. This makes it difficult to find a simple factor approach.
- 6.39 One approach would be to "shock" the present value amount of the policy liabilities using best estimate mortality rates. To find this shock the same kind of approach can be used as for volatility (e.g., Normal Power).

Level Uncertainty Example

- 6.40 As an example, let us use Portfolio 1 with an assumption that the best estimate mortality assumption had been derived from three years of experience. Further, the number of insured persons were
 - Year (-3) 97,013
 - Year (-2) 101,057
 - Year (-1) 116,651

For a total number of observations of 314,721. Therefore, based on the factor approach the 99.5% shock on the best estimate mortality rates is:

$$(\frac{77.4}{\sqrt{314721}} + \frac{942.7}{314721}) = 0.14$$

6.41 Therefore, the capital for level uncertainty can be based on liabilities calculated with 14% higher mortality rates (above best estimate, or BE, assumption) minus liabilities based on BE mortality rates. The impact of this on the liabilities will depend on duration, product and interest rate.

Duration /	Endowment		Pure en	dowment	Term		
Interest	4%	8%	4% 8%		4%	8%	
5	0.07%	0.14%	0.73%	0.73%	9.70%	9.71%	
10	0.19%	0.41%	1.14%	1.14%	9.49%	9.53%	
20	0.44%	1.00%	1.54%	1.54%	9.33%	9.43%	

The effect of 10% higher mortality rates on single premium business is given by:

6.42 These results indicate that the impact on a pure endowment is independent of the interest rate. The additional capital required for a 10% mortality change is simply the percentage in the table multiplied by the net single premium. On the other hand, a simple approach for term insurance can be to simply shock the liabilities by 10%.

Trend Uncertainty

6.43 Another mortality risk component is trend uncertainty, the difficulty in accurately assessing the future direction (e.g., improvement) of the mortality assumption in future years. With many product terms extending for the lifetime of the insured, this can be a considerable risk, especially for payout annuities. It is difficult to model mortality trend uncertainty in a simple way. The result depends on product, duration and interest rate. The graph below illustrates the value of trend uncertainty for a variety of products. The vertical axis indicates the value of trend uncertainty as a percentage of the underlying liability amount. The horizontal axis displays the remaining duration of the liability.



6.44 A simplified approach to provide for trend uncertainty could be to apply a factor multiplied by the present value amount of the liabilities (see following formula). The factor might be expressed as the lesser of α and β times the product duration *n*. Some sample values of α and β are also given in the table below.

c.	$= \min\{$	a Bn	(liah	ility)
Ctrend	– mmŋ	$[\alpha, pn]$	linn	<i>ииу)</i>

	α	β
Pure endowment	7%	0.35%
Endowment	3%	0.15%
Term	30%	1.50%

The uncertainty trend for a whole life annuity can be based on 4% of the liabilities (x>55). These calculations of trend uncertainty are based on a 99.5% confidence level.

6.45 The final capital requirement for mortality risks should provide for each of the components described in the preceding paragraphs, volatility, catastrophe, level and trend uncertainty. To the extent that the mortality experience is shared with the policyholders then corresponding credit should be granted in the capital requirements.

6.3.2 Lapse Risk

- 6.46 The risks posed to an insurer by an unanticipated rate of policy lapses, terminations or surrenders (collectively referred to here as 'lapse risk') are varied and complex. The treatment of lapse risk within a capital requirement will also vary from jurisdiction to jurisdiction. This variation is increased by the differences in how provision for lapses is or is not made within policy liabilities or actuarial reserves. It should be noted that in many jurisdictions, the valuation of liabilities is made using a modified net level premium approach that does not explicitly take lapses into account. The methodology used in other jurisdictions, particularly that based upon gross premiums, does make explicit recognition of the effect of lapses. The latter includes the valuation method being proposed in connection with the new international accounting standards being developed by the IASB.
- 6.47 There are two primary effects of unanticipated lapse rates. The first involves the payment of surrender or termination values. The relationship of the amount of a surrender payment to the value of the liability being held in respect of a particular policy is of great importance. When a policy lapses, the company pays the surrender value and 'receives' the actuarial reserve that is released by the policy's termination. If surrender values are lower than policy reserves, the company is at risk from lapse rates that are lower than expected, particularly if high lapse rates were anticipated in the pricing of a product. The case that surrender values exceed policy reserves results in higher lapse rates being unfavourable to the insurer. In some jurisdictions these risks are mitigated by regulations. A requirement that a company holds policy liabilities at least as large as surrender values provides partial protection against overly high lapse rates while minimum required surrender values reduce the likelihood that insurers will price their products using an assumption of high lapse rates. It is important to recognize that the relationship between the surrender value and the actuarial reserve is not fixed; it will generally vary with the duration of a particular policy.
- 6.48 The second primary effect of unanticipated lapse rates is that the insurer may not realise the expected recovery from future premiums of initial policy acquisition expenses. These acquisition expenses may be recognized implicitly in financial statements through the use of modified net level premium valuation methods. These implicit methods generally do not include any provision for unfavourable variations in lapse rates. Recovery of acquisition expenses may also be recognized explicitly through a reduction in policy liabilities or through introduction of a receivable asset. In this latter case, the adjustment to financial values is made subject to a form of

recoverability test. Under the second primary effect, the risk to insurers is generated by lapse rates that are greater than expected.

- 6.49 Unanticipated lapses can have other effects on the financial condition of an insurance company. For example, anti-selective lapse by healthier lives may lead to deterioration in a life insurer's mortality experience. This risk may be due to poor product design, an operational risk. In general, this risk is not treated for capital purposes as a lapse risk.
- 6.50 A capital requirement with respect to the first type of lapse risk requires the division of an insurance company's policies into two classes: 1) those policies for which actuarial liabilities L are greater than surrender values S, and 2) those policies for which S>L. The capital requirements would then be of the form j(L-S) or k(S-L) respectively, for appropriately chosen factors j and k. A capital requirement in respect of the second type of lapse risk could be of the form mU where m is an appropriately chosen factor and U is the present expected value of acquisition expenses recoverable from future premiums.
- 6.51 In the case that lapses are recognized explicitly in the valuation of actuarial liabilities, another approach to capital requirements in respect of the first type of lapse risk is available. This requires the division of policies into two classes: 1) those for which an increase in lapse rates results in an increase in policy liabilities, and 2) those for which policy liabilities increase when assumed lapses decrease. The capital requirement is of the form of the difference between a special valuation of policy liabilities and the normal valuation. For the special valuation, the lapse assumption is multiplied by a specified factor greater than one for policies in the first class and by a factor less than one for policies in the second class. As an example, in Canada, lapse rates are doubled for policies in the first class and reduced by one-half for those in the second class.
- 6.52 The last lapse case, which cannot be addressed in a factor-based approach are those products for which lapse risk does not act uniformly over the products life, such as lapses at early durations which may reduce the company's exposure to later risks for some policies and not for others.

6.3.3 Expense Risk

- 6.53 Operating expenses of an insurance company represent a considerable portion of an insurer's annual costs. The other major element of annual costs would include the change in policy liabilities (i.e., reserves or technical provisions) and policy benefits/claims. Solvency assessment of insurers should also consider the risks involved with the expenses of the company. It is important for an insurer to understand its expenses and their component parts for the purposes of proper product pricing, provisioning, solvency assessment, etc.
- 6.54 Most important in any analysis of insurer expenses is to obtain the split of expenses between acquisition and maintenance and also between fixed and variable. A table similar to the following should be developed.

Expenses	Fixed	Variable	
Acquisition	#	#	Total Acquisition
Maintenance	#	#	Total Maintenance
	Total Fixed	Total Variable	Total Expenses

6.55 Fixed expense are not those 'fixed per policy expenses' used in profit testing or embedded value calculations that are invariant to the size of the policy. The 'fixed expenses' are those expenses that do not vary in proportion to the volume of the total new and existing business at least over the short-term.

6.56 Especially important for assessing the adequacy of provisions and for solvency assessment is a proper determination of the split of expenses between acquisition and maintenance. This split is based on insurer judgement. If too many expenses are allocated to the acquisition category, then a forward looking view of the company's on-going maintenance expenses will be understated. This may result in the under-provisioning of such expenses in the liabilities and an overly optimistic view of the company's future financial condition.

Acquisition expense risk

- 6.57 New business consists of the sales of new policies. Although the value of future sales beyond the current year are not included, acquisition expense risk exists since acquisition expenses are partly fixed and the company may be subject to variances in new business volume.
- 6.58 Theoretically, a distribution could be fitted to model the past ratio of the actual and the planned sales volumes. The capital requirement could then be determined from the tail of that distribution.
- 6.59 A simple method that could be used to calculate the economic capital would be to calculate the capital as **Factor * Fixed Acquisition Expenses**. The fixed acquisition expenses are the fixed acquisition expenses in the subsequent year. The factor can be set at 100% and considers only a one-year time horizon.

Maintenance expense risk

- 6.60 Maintenance expense risk is due to:
 - Unexpected changes in the unit cost (assuming the portfolio runs off as expected) and
 - Unexpected changes in the volume of the portfolio.
- 6.61 It would be possible to run multiple projections for the existing business around which a distribution could be constructed in order to estimate the economic capital required for maintenance expense risk. However new business volumes and changes in business strategy have a significant impact on the expense structure of a company. Since in this phase new business beyond the valuation date is excluded we propose a simplified methodology for the calculation of the capital.
- 6.62 The first component is often related to the misestimation of inflation where this is expected to be a material risk factor. The methodology proposed is that the best estimate inflation assumptions are shocked by a factor (i.e., a 30% increase of inflation in the initial year decreasing linearly to the best-estimate assumption over 5-10 years; or perhaps a 1% increase over the lifetime of the business). The capital would then be calculated as the change in value of expense liability between the best estimate and shock scenario.
- 6.63 The second component is similar to that for acquisition expense risk and again a distribution could be fitted to model the past ratio of the actual versus the planned maintenance expenses. The basis for the solvency capital would be defined as the 0.5% tail of this distribution.
- 6.64 However, similar to the acquisition expense capital requirement, a simplified methodology for maintenance expenses may be more practical. A formula such as: Factor * Fixed Maintenance Expenses might be used. The factor would be based on expert judgement and reflect the company specific situation. A factor of the order of 75% might be reasonable and considers a three-year time horizon (i.e., assumes a 25% drop in the business volume and the inability of the company to adjust the fixed maintenance expenses over the period). The 75% factor assumes that the business does not have a material exposure to fluctuations in the equity markets that would impact the expected fee income. In this situation the factor is likely to be lower since equity risk already covers some of the maintenance expense business risk.

6.65 Alternatively, the policy liability including best estimate expense assumptions could be shocked to allow for both types of maintenance expense uncertainty (e.g., inflation and exposure to variable unit costs). The capital would then be calculated as the change in value of expense liability between the best estimate and shock scenario.

Alternate expense risk solvency calculation

- 6.66 The expense risk solvency calculation outlined above separated the risk for acquisition and maintenance expenses and involved determining the fixed and variable expenses. In some situations the classification of expenses into acquisition and maintenance / fixed and variable might be impractical or of limited benefit. In particular, this could be the situation in emerging markets where the experience is not stable and assumptions are based on short-term experience.
- 6.67 An alternate methodology for determining the expense risk capital requirement could involve looking at the expenses of a company in aggregate and simply estimating the economic capital as a **Factor * General Operating Expenses**. The factor would be based on expert judgement and reflect the company specific situation. General Operating Expenses would be the usual costs incurred in day-to-day operations. This would not include commission costs that are completely variable. A factor of the order of 100% might be appropriate.
- 6.68 The final capital requirement for expense risks should provide for each of the components described in the preceding paragraphs, acquisition, maintenance inflation and maintenance unit cost. To the extent that the expense experience is shared with the policyholders then corresponding credit should be granted in the capital requirements.

6.4 Underwriting Risk - Non-Life (General) Insurance

- 6.69 Some key idiosyncrasies of non-life (general) insurance, which require special consideration in the development of any standardized formula, include the following:
 - heterogeneity of risk (even within established "classes" of insurance business)
 - substantial effects of correlation between different underwriting risks
 - difference between outstanding claims liabilities and liabilities because of unexpired risk inherent in unearned premiums
 - annual renewal basis for the vast majority of the business
 - significant role played by reinsurance (especially in relation to concentration of risk)
 - difficulty in estimating separate claim incidence and severity in projecting experience for a minority of the business.
- 6.70 In summary, any standardized approach for non-life insurance will need to take account of these characteristics and will require the classification of all non-life insurance business in each supervisory jurisdiction into defined lines of business (LOB's) the level of detail in the definition effectively being in the control of the supervisor in the jurisdiction under consideration.
- 6.71 The standardized approach will also require specification for each LOB of a LOB Coefficient of Variation (CoV), a LOB Size Factor (SF), and a LOB Confidence Factor (CF). In addition, a set of Correlation Coefficients (CC) will need to be specified for each pair of LOB's.
- 6.72 CoV's for outstanding claims liabilities would typically be expected to be in the range of 10% to 20% for short tail business and typically in the range 20% to 30% for long tail business. CoV's for unexpired risk liabilities would generally be expected to be between 25% and 75% higher than the CoV used in the same LOB for the outstanding claims liability.
- 6.73 LOB Size Factors would be specified to increase the level of capital required for smaller portfolios compared to medium or larger portfolios to reflect the increased impact of non-systematic risk in smaller portfolios.

6.74 For illustrative purposes, a standardized approach applicable to non-life insurance LOB's might reasonably be used

(a) Correlation coefficients between any pair of classes of business greater than or equal to 25%(b) Correlation coefficients between any two long-tail classes of business greater than or equal to 50%.

Appropriate coefficients for each jurisdiction would need to be determined.

- 6.75 A simple illustration of these concepts is set out in the table below which assesses a total capital requirement of a hypothetical insurer to be \$9,894 million where total expected losses (before diversification allowances) are \$7,425 million.
- 6.76 A standardized approach of this kind also requires a genuine best estimate of the expected loss in each LOB from both unexpired risks and outstanding claims including incurred but not reported claims. This expected loss needs to be calculated net of reinsurance recoveries expected by the insurer other than for catastrophic losses for which capital requirements are modelled separately. It is recommended that the expected loss for each LOB be calculated either by adopting a frequency- and severity-based calculation based on actual exposures or, if data adequate to support such a calculation is not available, by using a projected loss ratio applied to premium earned. These calculations could be completed using either data supplied by the company or as specified by the supervisor, depending upon the requirements of the supervisor in each jurisdiction. It is important that these expected loss estimates not be made in an unduly conservative fashion so as not to compromise the integrity of the capital calculation methodology as a whole.

		Standardize	a ractor A	pproacn		
Line of Business	Liability Type	Expected		Confi-		Capital
		Loss	CoV	dence	Size	Required
		(\$M)	%	Factor	Factor	(\$M)
Motor Car	Unexpired Risks	750.00	15.00%	2.50	1.0	1,031.25
Motor Car	Outstanding Claims	250.00	10.00%	2.50	1.0	312.50
Home	Unexpired Risks	500.00	18.00%	2.50	1.0	725.00
Home	Outstanding Claims	125.00	12.00%	2.50	1.0	162.50
Workers Compensation	Unexpired Risks	1,250.00	35.00%	2.50	1.0	2,343.75
Workers Compensation	Outstanding Claims	3,750.00	25.00%	2.50	1.0	6,093.75
Public Liability	Unexpired Risks	200.00	30.00%	2.50	1.0	350.00
Public Liability	Outstanding Claims	600.00	20.00%	2.50	1.0	900.00
Sub-Totals (before	Unexpired Risks	2,700.00				4,450.00
Diversification)	Outstanding Claims	4,725.00				7,468.75
	All Classes	7,425.00				11,918.75
Diversification Allowance	All Classes					-2,024.60
Totals	All Classes					9,894.15
Correlation	•	•				

Illustration of Simple Non-Life Insurer

Coefficients

	Motor Car	Home	Workers	Public		
			Comp.	Liability		
Motor Car	100.0%	50.0%	25.0%	25.0%		
Home	50.0%	100.0%	25.0%	25.0%		
Workers Compensation	25.0%	25.0%	100.0%	50.0%		
Public Liability	25.0%	25.0%	50.0%	100.0%		

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- 6.77 The case study, described in appendix B, is more sophisticated than the simple standardized approach described above. It includes a table of calculated correlation factors that enables the effects of diversification of risk to be included in the model outputs. These factors may be prescribed or may be calculated from underlying data where available. Concentration of risk is identified and appropriate allowance for reinsurance may be included. However, the model does not attempt to accurately measure specific reinsurance effects and it is suggested that existing commercially available risk models be used to assist in this area.
- 6.78 In the model in appendix B, the input of data for each LOB enables the mean and variance of each insurer's aggregate loss distribution to be calculated. The loss component of the capital requirement, net of catastrophe reinsurance, is then assessed using a lognormal (i.e., skewed) assumption regarding distribution of losses and the TVaR at a "selected" level. The supervisor can select the TVaR level by taking account of the assessed market security requirement and judgement regarding the "goodness of fit" of the lognormal distribution, especially for some of the more heavily skewed risk distributions.
- 6.79 The case study model is simple enough to be represented easily in spreadsheet form and yet detailed enough to allow specific consideration of five of the six key issues listed at the beginning of this section (note that, in respect of the sixth issue, it is a relatively straightforward adjustment to replace the separate claim incidence and mean cost assumptions with an aggregate loss assumption for any selected LOB). The outputs from the model can be designed to be conservative, but enough detail remains in its representation of the business for the supervisor to ensure that any conservatism is not excessive.
- 6.80 The model includes "c" factors that take account of the size of the respective LOB's and "b" factors that essentially quantify the correlation effects. These b's and c's effectively combine to create the "k's", as well as allowance for the correlation effect in section 6.2.1.
- 6.81 Neither the standardized approach set out above nor the case study addresses either market risk or credit risk for the general insurer, since these risks are essentially common to all types of insurance.
- 6.82 The model does exhibit some of the necessary flexibility in that inputs may be largely governed by the supervisor or the individual insurer may well be responsible for the large majority of data for the model (and hence making strides towards the creation of an internal modelling approach). It is a member of the range of potential modelling approaches that may be use globally.
- 6.83 In order to extend the "family" of models into use in markets where more sophisticated and accurate data may be available, it is possible to augment the case study model with a number of features to improve flexibility and accuracy. These may include greater "tailoring" of the loss distribution curves to the characteristics of the business (e.g. through the use of a range of formulas or empirical data) and an increase in the range of factors used to model risk correlations). At the other end of the scale, to cater for a market in which actuarial advice is largely absent, it is possible to create a model with a reduced number of entirely prescriptive factors to be applied, for instance, to a broader definition of LOB, or to broad bands of business by size (or by a combination of both) similar to the standardized approach outlined above.

6.5 Underwriting Risk - Disability Income

- 6.84 The following paragraphs provide an illustration of the determination of standardized capital requirements for disability income products.
- 6.85 In the U.S. risk-based capital (RBC) formula for insurance companies, the most significant component for all health insurance products is the underwriting component. The factors for the

asset risk and operational risk are common for all of the insurance products. There is no interest rate risk component for any of the health products. The following description of the process used to determine the formula for the underwriting risk component for disability income (DI) is similar to the process used for the other health products.

- 6.86 Data and information was collected from all of the DI writers in the U.S. that were willing to contribute to the study. The data collected included incurred claims, earned premiums, policy reserves and tabular claim reserves for as many of the most recent ten years that were available. Interest adjusted loss ratios were calculated using changes in policy reserves that were not caused by a change in basis or reserve formula assumptions. The standard deviation and serial correlation of the loss ratios for each company and for all companies combined were calculated. This process was performed separately for each of the major forms of DI insurance sold in the U.S.
- 6.87 Other information collected in the study included: number of months after a loss ratio falls outside of an acceptable range until a premium rate change is implemented; the percentage of premium that is eventually changed where a rating action is indicated, expected loss ratio, expense ratio and profit ratio, all expressed as a percentage of earned premium.
- 6.88 A random walk, stochastic model was then built that, given a specified starting level of capital, calculated the operating gains and accumulated surplus for a five year measurement period. The model assumed a stationary population of in force business, where new sales equal terminations each year. The actual loss ratios collected in the survey were adjusted to reflect the difference between the actual loss ratio and its expected value given the premium rate changes generated by the model resulting from management actions. The time needed to implement a rating action is the "phase in factor" and is developed from the survey along with the upper and lower loss ratio limits that would cause a rating action to be initiated. The model adjusts the randomly generated loss ratio to reflect the indicated premium rate changes each year.
- 6.89 The model generates a loss ratio, or claim cost per \$1 of premium, each year of the projection period which is the sum of three terms:
 - 1. **The previous year's loss ratio**. The model was run for a three year "seasoning period" prior to the beginning of the actual projection period, so there is a previous year's loss ratio even for the first year of the projection period.
 - 2. A correlation deviate for the projection year. This is based on a random normal distribution deviate with a standard deviation of the loss ratios collected with the adjustment discussed above and another adjustment to reflect the serial correlation calculated from the data.
 - 3. A term to adjust the current year's loss ratio to reflect changes in the premiums that would occur according to the rules for timing and amount of premium actions that would be initiated when loss ratios fall outside of specified limits.
- 6.90 50,000 scenarios were run for several test initial surplus amounts, calculating the resulting gain or loss and accumulated surplus amount per \$1 of earned premium. The gain or loss is the sum of the \$1 premium plus expected interest on reserves and accumulated surplus less the randomly generated claim cost, expected expenses and taxes. Ruin occurs when the resulting accumulated surplus falls below zero in any year of the projection period. By interpolation and successive iterations of the process the beginning surplus is found that results in a 5% probability of ruin. This is the RBC amount when expressed totally as a percent of premium.

- 6.91 A similar stochastic study determined that, if around 5% of claim reserves were added as starting surplus to the amount of claim reserves, the total fund would be adequate with a 95% confidence level. The final formula for the underwriting component adopted the 5% of claim reserves plus a percent of earned premiums, where the percent was reduced to reflect the amount shifted to the claim reserve.
- 6.92 The analysis was performed on both large and small blocks of business separately, resulting in larger earned premium factors for the small blocks. This was reflected by using a tiered formula, with a larger factor for the first \$X of premium and a smaller factor for the excess over \$X. As an example, the formula for individual non-cancellable disability income insurance is: 5% of tabular claim reserves plus 35% of the first \$50 million of earned premium plus 15% of the earned premium in excess of \$50 million. Several other types of DI insurance are specified, each having its own unique set of factors. Every U. S. insurance company that writes DI insurance must use this formula and set of factors to determine the underwriting component for DI in there RBC.

6.6 Credit Risk

- 6.93 Appendix E describes the sources of credit risk for an insurance entity. In summary, they are
 - Direct Default Risk: risk that a firm will not receive the cash flows or assets to which it is entitled because a party with which the firm has a bilateral contract defaults on one or more obligations
 - Downgrade or Migration Risk: risk that changes in the possibility of a future default by an obligor will adversely affect the present value of the contract with the obligor today
 - Indirect Credit or Spread Risk: risk due to market perception of increased risk (i.e., perhaps due to business cycle or perceived credit worthiness in relation to other market participants)
 - Settlement Risk: risk arising from the lag between the value and settlement dates of securities transactions
 - Sovereign Risk: risk of exposure to losses due to the decreasing value of foreign assets or increase the value of obligations denominated in foreign currencies
 - Concentration Risk: risk of increased exposure to losses due to concentration of investments in a geographical area or other economic sector
 - Counterparty Risk: risk of changes in values of reinsurance, contingent assets and liabilities (i.e., such as swaps that are not otherwise reflected in the balance sheet).
- 6.94 From a supervisor's perspective, the main areas of focus in respect of credit risk are
 - inordinate "peaks" of risk due to any number of factors
 - reliability and consistency of any external or internal credit rating approaches.
- 6.95 Given that it is not possible to devise a simple capital framework to incorporate all credit risk factors into account in an accurate fashion, the suggested approach is one aimed at the major factors.
- 6.96 The approach is clarified by the separation of credit risk into "Type A" (or risk relating to actual assets held and the insurer's ability to manage its credit loss position) and "Type B" (or credit risk involved with future reinvested assets).
- 6.97 The time horizon is an important consideration for credit risk. The WP believes that one year is an appropriate limit for capital considerations. The capital requirements should be determined using a degree of confidence consistent with that chosen for other risks.

- 6.98 The Working Party (WP) recommends that the work of the BIS with respect to credit risk capital requirements for banks be also considered for use by insurers in capturing Type A credit risk. In considering the BIS approach, insurance supervisors will need to consider the appropriateness of the time horizon and confidence level assumptions implicit in the BIS approach. Also to be considered is the appropriate treatment of policyholder pass-through features.
- 6.99 By definition the development of standardized approaches for capturing Type B risks is fraught with difficulty. Where these risks are material in an insurer, the supervisor should encourage or even require the insurer to perform appropriate advanced approaches to modelling their Type B credit risk.
- 6.100 Standardized approaches to assessing Type B credit risk might include (from the simplest to the more sophisticated):
 - a. Where it is not possible to directly compute the present value of future liability cash flows, provision for Type B credit risk can be made approximately by applying a factor to the policy liabilities of long-term business. These factors would need to be tailored to the circumstances of an individual supervisor and their financial reporting structure for these liabilities.
 - b. Where it is possible to estimate the duration of long term business, provision for Type B risk can be made approximately by applying a credit risk spread to the duration (beyond that of the current assets) and the policy liabilities for long-term business.
 - c. Where it is possible to directly compute the present value of future liability cash flows, provision for Type B credit risk can be made directly through use of a credit risk spread.

6.7 Market Risk

- 6.101 The principal sources of market risk for insurers are
 - Interest Rate Risk- risk of exposure to losses resulting from fluctuations in interest rates
 - Equity and Property Risk- risk of exposure to losses resulting from fluctuation of market values of equities and other assets
 - Currency Risk- risk that relative changes in currency values decrease values of foreign assets or increase the value of obligations denominated in foreign currencies
 - Basis Risk- risk that yields on instruments of varying credit quality, liquidity, and maturity do not move together, thus exposing the company to market value variation independent of liability values
 - Reinvestment Risk- risk that the returns on funds to be reinvested will fall below anticipated levels
 - Concentration Risk- risk of increased exposure to losses due to concentration of investments in a geographical area or other economic sector
 - Asset/Liability Mismatch Risk- to the extent that the timing or amount of the cash flows from the assets supporting the liabilities and the liability cash flows are different (or can draft apart) the insurer is subject to asset/liability mismatch risk.
 - Off-Balance Sheet Risk- risk of changes in values of contingent assets and liabilities such as swaps that are not otherwise reflected in the balance sheet.

6.102 An in-depth discussion of insurer market risk appears in Appendix D.

- 6.103 Market risk can only be measured appropriately if the market value of assets and liabilities are measured adequately. Market values of assets can generally be deduced from listings in the various securities markets. Because of the lack of a real market for insurance liabilities, the market value of insurance liabilities can be approximated through evolving market/fair value techniques. The concept of the "replicating (asset) portfolio," may be a useful concept in measuring the market value of insurance liabilities.
- 6.104 In general, life and health insurers purchase assets to match their liabilities. Historically this has not been true for non-life insurers, who tend to manage separately the results from underwriting and investments. While all of the assets of an insurer are available to provide against adversity, it is common risk management practice for insurers to, implicitly or explicitly, allocate their assets for one of the following purposes:
 - support insurance contract liabilities
 - provide economic capital
 - provide free surplus.
- 6.105 Sizeable portions of an insurer's liabilities can have durations (e.g., terms) comparable to readily available high quality liquid assets in the local market. In these situations it is possible to select assets whose cash flows can provide a very close match to the liability cash flows. In other words, a replicating portfolio of assets is available in the market. In this situation, market risk focuses on the volatility of the market value of the actual assets held and the market value of the replicating portfolio of assets and the ability of the insurer to manage that volatility. This type of market risk will be called **Type A** risk and it also includes the effect of volatility on the insurer's regulatory capital requirement for these risks and the assets representing that capital.
- 6.106 The long-term duration of some insurance (especially life insurance) liabilities requires the consideration of long-term rates of reinvestment since replicating portfolio assets of sufficient duration may not be currently offered in the market. Measuring market risk for these liabilities entails considerable uncertainty about the composition of the replicating portfolio and the manner of its reinvestment to mature the underlying cash flows. Lowered rates of reinvestment in the future are typically of concern. In addition, life insurance contracts may contain various complex, long-term options and/or guarantees for which replicating market positions may not currently exist (e.g., death and maturity guarantees on variable annuity products). These latter two types of market risk will be called **Type B** risk. Type B risk also includes the effect of volatility on the insurer's regulatory capital requirement for these risks and the assets representing that capital.
- 6.107 The assets and liabilities of an insurer are subject to Type A and possibly Type B risk. Shorter term insurance contracts without complex embedded options or guarantees are subject to Type A risk. Long-term insurance contracts and/or those containing complex embedded options or guarantees may be subject to both Type A and Type B market risk.

6.7.1 Standardized Approaches for Type A Risk

- 6.108 The essential ingredients required to assess Type A market risk are
 - projected future asset and liability cash flows
 - nature of embedded options
 - time horizon
 - confidence level
 - current economic scenario
 - series of possible future economic scenarios.

- 6.109 Approximations can be made with respect to these ingredients to simplify the Type A risk determination. The result is a range of standardized approaches from the most elemental to approaches that closely compare to the advanced approach.
- 6.110 One such approximation might use option adjusted durations to represent the price sensitivity of cash flows, the current market value of future cash flows and a set of investment return shocks. The shocks would need to be designed to reflect the time horizon and confidence level desired as well as the possible pattern of adverse scenarios. In this regard, it may be desirable to recognize the more active investment management conducted on closely managed blocks of business (i.e., when the active management holding period is less than the standard one-year time horizon).
- 6.111 Another approximation might require the grouping of future cash flows into various term "buckets" (BIS uses the term "maturity method"). The sum of the cash flows in these "buckets" would be multiplied by factors to produce the capital requirement. These factors would, in theory represent a combination of the above basic ingredients (i.e., time value of money from current economic scenario, adverse shock for desired confidence level and time horizon, etc.). This type of approach is currently used by the BIS in their standardized approach for banks.
- 6.112 A very simple approximation, which depends heavily on broad decisions about the industry's generalized exposure to Type A risk, is to simply multiply the balance sheet value of insurer assets and liabilities by a table of factors reflecting the presumed presence and size of Type A risk.
- 6.113 The relative merits of each type of approximation need to be viewed by the supervisor in light of local conditions, expertise and inherent industry risk. Objectivity and ease of calculation need to be balanced with greater accuracy, complexity and the overall impact of the method chosen on the management of market risk by insurers and the types of products that are offered in the market place.
- 6.114 To develop standardized approaches for market risks (or other risks for that matter) requires judgement and supervisory tradeoffs depending on the supervisor's choice of approximation and its method of application. Ideally, the conservatism inherent in a standardized approach should incent insurers to use (to the extent they are able) more advanced methods in the future.
- 6.115 One possible concern in designing more advanced approaches that allow judgement to be used by the insurer (e.g., if the degree of market risk is subject to the asset allocation practices of the insurer) is that the results will be less transparent since there may be opportunities for the insurer to self-select (to some extent) the resulting solvency requirement. It is important for the supervisor to consider in advance the possibilities and significance of such self-selection and to weigh this risk against the risk of accepting a factor approach which (through the use of broad or industry factors) may not recognize fully the risks of a specific insurer. For example, the concern surrounding asset allocation "games" can be addressed directly through a requirement that asset allocation for purposes of the capital requirement must coincide with the insurer's management of their business.
- 6.116 Particularly in life insurance, some market risk from the total asset portfolio may be transferred to policyholders. This is generally the case in Universal Life business and many forms of adjustable and "with profits" business. Clearly, such assets and the corresponding liabilities should be closely matched (ignoring the non-financial diversifiable risks that may affect these liabilities) and the degree of such sharing of market risk needs to be reflected in the chosen standardized approach.
- 6.117 The following subsections outline some important aspects in selecting a standardized approach for certain sources of market risk as well a possible treatment of dependencies.

6.7.2 Standardized Approaches for Type B Risk

- 6.118 By definition, the development of standardized approaches for capturing Type B risks is fraught with difficulty. Where these risks are material in an insurer, the supervisor should encourage or even require the insurer to perform appropriate advanced approaches to modelling their Type B market risk.
- 6.119 Standardized approaches to assessing Type B market risk might include
 - For long-term interest guarantees in life insurance and annuity products, determining the present value of future liability cash flows on the presumption that long-term reinvestment returns revert to a conservative view of historical long-term averages.
 - For complex options, deriving appropriately conservative factors based on rigorous stochastic modelling of industry-wide data to adequately capture the tail of the loss distribution for the confidence level required.

6.8 Operational Risk

- 6.120 For the reasons described earlier in this report, the WP believes it appropriate that an insurer's overall requirement contain a component for operational risk. However, the current shortage experience data in this area will require the determination of an appropriate level for this component of the overall capital requirement will be subject to judgement by the supervisor.
- 6.121 The approach adopted within Basel II by the banks may be worthy of consideration for insurers. The Basel II approach provides for a "standard", "basic indicator" and "advanced measurement approach" (AMA). The first two approaches are based on simple multiples of gross income. These simpler approaches are not risk-sensitive. Only the AMA allows the banks credit for various risk management techniques.
- 6.122 The WP suggests that a reasonable level at which to introduce an operational risk capital requirement may be in the range of 10-20% of the otherwise determined capital requirements. This amount may be actually calculated under a "standard" approach by applying a single percentage (or table of percentages) to one (or a combination) of readily determinable items such as:
 - underwriting risk capital requirement
 - credit risk capital requirement
 - market risk capital requirement
 - net earnings
 - assets under management
- 6.123 Alternatively, under a "basic indicator approach" a set of adjustment factors or α 's could be applied to allow the "standard" approach to be modified by major line of business.

6.9 Final Steps

- 6.124 The WP development of the standardized method has offered alternative approaches for developing factors based on risk exposures within each of the four major risk categories described above. These alternative approaches allow supervisors to choose the desired balance of simplicity and realism within each major risk category that is most appropriate for the given supervisory regime.
- 6.125 There are also alternative approaches to adjust for risk interdependencies (where not all of the risks can go bad all at the same time). These alternatives allow the supervisor to define the desired balance of simple measures and realistic capturing of aggregate company risk. The

general approach was described previously in paragraphs 6.19 & 6.20 and is also described in section 9.3. Appendix I discusses the theory and value of copulas, which allow a supervisory framework to go beyond simple summing of risks and even beyond efforts to use the square root of the sum of squared risks.

6.126 It must also be remembered that standardized methods, by their nature, may not capture all types of risk accurately or at all. However, within the overall multi-pillar supervisory process all types of risk must be addressed. If risks are not adequately captured within Pillar I (e.g., perhaps liquidity, strategic, legal, etc. risks) then they need to be addressed within either, or both, of Pillar II and Pillar III.

7. Advanced Solvency Assessment

7.1 Introduction

- 7.1 The standardized approaches for determining capital requirements described in the previous section are intended to be applied uniformly by all companies of a fixed type, life, general or health, in a jurisdiction. Since they are meant to determine adequate capital for a wide variety of insurers, these methods are generally conservative. A jurisdiction may have large and technically sophisticated insurers for which these methods overstate required capital.
- 7.2 A jurisdiction may wish to allow certain companies to calculate required capital using methods that more directly reflect each company's particular exposure to risk. This chapter is devoted to a description of possible company-specific methods and to a discussion of issues a supervisor must deal with when allowing a company to apply these methods.

7.2 On Adopting Company-Specific Approaches

7.3 The notion of company specific approaches is found in several places in the Basel Accord. The earliest occurrence is contained in the section on the provision for market risk in a bank's trading book of assets. Here, banks may be allowed to use their own internal models, subject to specific requirements and conditions being satisfied. These requirements and conditions are discussed at length below. The proposed revision to the Accord, commonly referred to as Basel II, contains several additional examples of company specific approaches, generally labelled as advanced approaches, applied to credit and operational risks. The Working Party's suggestions represent an extension to insurance of the approach taken in the Basel Accord with respect to banks.

7.2.1 Similarities to and Differences from Basel II

- 7.4 However, there is a significant difference between banking and insurance. In the Accord, the standardized approach involves measures of a bank's exposure to risk that are based upon standard accounting conventions that do not involve any element of discretion or choice by the particular bank. This cannot be the case in insurance since many of the most common measures of exposure to risk for an insurer are related to (actuarial) policy liabilities. Actuarial liabilities, whether they are policy reserves for future claims or claim reserves for claims that have occurred but whose amount and time of payment are not known, involve estimates of uncertain future financial values. Although some of these liability amounts may be based upon standard assumptions that are set by law or regulation, the majority of calculations are based upon best estimates selected by a company's actuaries. The exercise of choice by a company in determining its liabilities is fundamental for insurance in a way that is not found in banking. The standardized approach suggested by the WP makes use of policy liabilities. It follows that the distinction between standardized and company-specific approaches is not the same in this report as it is in the Basel Accord.
- 7.5 The phrase *company-specific approach* means a method of determining an insurance company's capital requirement with respect to a particular source of risk that measures the intensity of the risk in relation to the company's own experience or the structure of its portfolio of business. By contrast, a *standardized approach* is one that is based upon standardized factors that measure the intensity of risk, applied to measures of the company's exposure to risk, or is based upon differing measures of the company's exposure to that risk (e.g. the difference between policy liabilities based upon the company's standard assumptions and those based upon specified variations in these assumptions).

7.2.2 Conditions for Approval

- 7.6 When a company calculates the component of required capital with respect to a specific source of risk by means of a company specific approach, it is to be expected that the result will be less than the value for that component that would result from a (more conservative) standardized approach. It is therefore necessary to consider the conditions under which the supervisor could be comfortable with this result. There are two sets of conditions: the first set involves the appropriateness and accuracy of the particular approach taken by the company while the second involves the actions of the company to manage and mitigate the particular risk.
- 7.7 The supervisor must have assurance that an insurer's company specific approach is appropriate and gives an accurate measure of required capital. This requires a detailed analysis of both the company's methodology and of the specific company data used in the calculation. The particular methodology used by a company will vary. It is particularly important that the supervisor examine it and have confidence that it is theoretically correct and properly implemented. In order to adequately evaluate the insurer's methodology, the supervisor must either have its own technical expertise or have access to independent outside experts. The supervisor must be satisfied with the integrity of the company's data that will be used in the calculation. Of major concern will be the data's sufficiency and credibility and the statistical methods used to organize and analyse the data. The qualifications of the insurer's personnel associated with this approach will also be of concern.
- 7.8 Required capital can be thought of as a second line of defence protecting an insurance company's solvency and its policyholders. The first line of defence is solid risk management. If trouble develops that cannot be prevented through management of a risk, then risk based capital should be available to cover the financial losses that emerge. It follows that in order for a supervisor to be content with a lower amount of required capital under a company specific approach, there must be some assurance that the particular source of risk is under control, its effects are well mitigated and there is a reduced need for the required capital. Therefore, in approving a company's use of an advanced or company specific approach, the supervisor should confirm that the company has in place appropriate risk management processes together with a satisfactory reporting structure.

7.3 Examples of Company Specific Approaches

7.9 There are a wide variety of company specific adjustments that could be introduced into a determination of an insurer's required capital. This report cannot possibly present more than a few of them. Our purpose here is to illustrate some company specific approaches that could be introduced and to point out some of the safeguards and conditions that a supervisor could require or impose before allowing an insurance company to adopt a company specific approach. A supervisor who has understood the approach and the reasoning outlined here should be in a position to adapt these examples to the specific products, insurance markets and legal systems in the particular jurisdiction.

7.3.1 Credit Risk in Basel II

7.10 Under Basel II, a bank's capital requirement for credit risk depends, in insurance terminology, on the frequency of asset defaults and upon the severity distribution of amount of loss give that default has occurred. The Basel II proposal offers two company specific approaches. In the first, a bank may make use of frequencies of default based upon its own asset quality ratings and frequencies of default while using standardized severity distributions. In the more advanced approach, the bank may also use its own severity distributions.
- 7.11 A bank would have to have experienced considerably more asset defaults in order to derive credible severity distributions than are required to derive credible frequencies. It is therefore to be expected that the more advanced approach would only be available to the largest and most technically sophisticated banks that have experienced extensive defaults, are able to thoroughly analyse their credit experience and have very sound risk management systems in place.
- 7.12 Banks originate many of their assets through their lending activities. These assets can usually only be assigned a quality or credit rating through use of a bank's own rating system. The determination of required capital for the credit risk makes use of credit ratings; the use of a bank's own rating system is regarded as an advanced approach under Basel II. While some insurers do invest in private placements, the bulk of their investments are in publicly traded assets that usually have been rated by a recognized rating agency. It follows that advanced approaches with respect to credit risk are generally more important for banks than for insurers. However, insurance supervisors should nonetheless pay attention to the ratings and attendant assumptions regarding the frequency and cost of asset defaults that are used by insurers.

7.3.2 Risk Pass-Through Products

- 7.13 A number of insurance products contain features under which the insurance company's experience (perhaps as measured by its financial results) under these policies is shared in whole or in part with policyholders. If this sharing mechanism is effective in reducing the risk to the insurer, it would be appropriate to recognize this in the calculation of required capital. The sharing mechanism is bound to depend upon the specific product design and the methods that the company employs to administer the business and operate a risk-sharing mechanism. Therefore, recognition given in the calculation of required capital to the reduction of risk to the company will be a company specific matter.
- 7.14 The type of products that are illustrated here are primarily those of life insurance companies; in particular, we consider participating or with-profits business, as well as certain types of Universal Life and other "new money" or adjustable products.
- 7.15 The supervisor's primary concern in allowing an insurer to reflect its risk sharing mechanisms in the determination of capital requirements is to ensure that the insurer will actually be able and willing to reflect unfavourable experience in policyholder dividends or bonus scales. The supervisor will want to examine, among other things, the insurer's dividend or bonus policy, its history in administering that policy in the past, the effects of any smoothing mechanism that may be in place, as well as the insurer's competitive position and the perceived effect on the part of company management and the supervisor that a reduction in dividends or bonus due to unfavourable experience would have on that position. The supervisor should take into consideration whether the concept of policyholders' reasonable expectations would inhibit or restrict the company's ability to pass on unfavourable experience to its policyholders.
- 7.16 Consider, the case of asset default risk for participating or with-profits business. An insurer might assert that the costs of asset defaults are passed on to or shared with policyholders and might then request a reduced capital requirement in respect of this risk. The supervisor would want to know that the assets supporting this line of business are clearly segmented from assets supporting other lines so that the assets to which a reduced requirement might apply and from which defaults might be generated are clearly identifiable. The supervisor would next examine the particular risk sharing mechanism (e.g. dividend scale, bonus scale, smoothing account, experience rating) used by the insurer in this instance. The degree of sharing of experience and the speed with which the mechanism effects that sharing would be reflected in the amount of capital relief that is granted.

- 7.17 In another product design, the investment income credited to a customer's account may be related to values of a recognized stock market index. The supervisor would want to examine the direct relationship between changes in the index and the amount of earnings (positive and negative) that are attributed to policyholders' accounts. Capital relief could be close to total when the correlation between changes in the index and interest credited to policyholders' accounts is close to one and less as this correlation decreases away from one. In order to gain approval for a reduced capital requirement, the company would have to demonstrate this correlation for historical data over, for example, the previous year.
- 7.18 It is important to distinguish between risk sharing mechanisms that are retrospective and those that operate only prospectively. The mechanisms described above are all retrospective in nature. They enable a company to share past experience with policyholders. Prospective mechanisms allow companies to adjust future premiums in anticipation of expected unfavourable experience. However, they do not provide any relief to a company that has already experienced significant losses. While they do not appreciably eliminate the need for capital, prospective risk-sharing mechanisms do put the company in a better position than it would have if these mechanisms were not in place. It should be noted that in the standardized approach, a capital requirement may be linked to the period for which future premium rates are guaranteed, with longer term guarantees requiring increased capital. Prospective risk-sharing mechanisms are in the nature of adjustments to future premiums and should be reflected in capital requirements as reductions in the length of premium rate guarantee periods.

7.3.3 Experience Rating

- 7.19 Retrospective experience rating is a feature of many large group insurance contracts. If an insurer has a binding undertaking from the policyholder to fully share in the insurer's experience with respect to the case, it could be appropriate to recognize this in the calculation of required capital. This would vary by the particular group insurance policy. A reduction in capital could only be granted if the contract wording legally binds the policyholder to pay for case deficits arising from unfavourable experience. Even then, an appropriate provision for counterparty risk will need to be made.
- 7.20 There are instances where insurers hold policyholders' funds on deposit with the understanding that the insurer can call upon these funds to make up for a case specific experience rating deficit. If the contact wording was sufficiently binding on the policyholder, it could be appropriate to recognize these deposits as offsets to or reductions in required capital. However, this recognition could only be granted on a policy-by policy basis since deposits attributable to one policy could not be used to offset unfavourable experience arising from another policy.

7.4 Internal Models

7.4.1 Introduction to Internal Models

7.21 The company specific approaches discussed above involve modifications to or adjustments of a standardized approach. They recognize the availability of company specific information or the nature and effect on company operations and risk of specific product designs or administrative methods. In this section, we consider methods for determining required capital that are not necessarily modifications of the standardized approach. They are, instead, alternate approaches and methods that recognize directly a company's specific circumstances.

- 7.22 These approaches are based upon computer models of a specific line of business or segment of a company's activity. They are usually stochastic in nature and directed to determining the amount of capital that will be sufficient to guarantee the success of that portion of the company's business to a high degree of probability. These models depend upon scenario generators that can produce a wide variety of scenarios that can affect the future course of the company's business.
- 7.23 In general, each company would construct its own model. The model reflects the company's specific product designs, its various administrative policies and procedures, and other practices including investment policy and claims settlement. It is the role of the supervisor to determine the level of probability that is to be tested as well as the length of the future period over which future model projections are carried out.
- 7.24 The supervisor must validate and approve the model. This approval extends to the scenario generator. In many cases, the primary stochastic element will be the performance of some set of economic indices such as interest rates or equity market averages over time. Here, the supervisor must be satisfied that the generator is consistent with the theory of financial economics and appropriate for use in the particular application. It is not to be expected that this type of scenario generator would vary significantly from one company to another in the same jurisdiction and operating in the same economic environment. In other models, particularly in the case of general (non-life) insurance, the scenario generator may be used to generate claims experience. In this case, the generator could well be specific to the company and the types of business it conducts. The supervisor would have to be satisfied that the generator captures the range of possible claims that the company could experience.

7.4.2 Uses of Internal Models

- 7.25 Internal models are currently in use under several capital regimes. These include:
 - The Basel I capital requirement for banks allows for the use of internal models in setting the capital requirement in respect of market risk with respect to the block of assets held for trading. This is described in the paper:
 - Basel Committee on Banking Supervision, 1996 Amendment to the Capital Accord to Incorporate Market Risks, Basel Committee Publications no. 24. Basel, Switzerland. Online at <u>http://www.bis.org</u>
 - The Canadian capital requirement in respect of life insurance companies, MCCSR, allows the use of internal models for determination of the component of required capital for guarantees with respect to investment products known as segregated funds. The MCCSR is described in the paper:
 - Office of the Superintendent of Financial Institutions Canada, 2003 Minimum Continuing Capital and Surplus Requirement, Guideline A (Insurance), Ottawa, ON. Online at <u>http://www.osfibsif.gc.ca</u>
 - Conditions for use of a model are given in:
 - Office of the Superintendent of Financial Institutions Canada, 2001 Use of Internal Models for Determining Required Capital for Segregated Fund Risks, Instruction Guide (Insurance), Ottawa, ON. Online at <u>http://www.osfi-bsif.gc.ca</u>
 - The Australian capital requirement in respect of general (non-life) insurance companies permits the use of internal models. This is described in the paper:
 - Australian Prudential Regulatory Authority, Internal Model Based Method, Guideline GGN 110.2, Sydney, NSW. Online at <u>http://www.apra.gov.au</u>

7.4.3 Validation Criteria

- 7.26 The three instances described in the preceding section where internal models have been adopted for required capital calculations embody a similar approach. In particular, they contain similar criteria that supervisors impose before a company's model is approved for use. The essential criteria are described in the following paragraphs.
- 7.27 To be valid for use in the supervision of insurance, an internal model needs to be demonstrably capable of meeting a number of criteria in respect of prudence, comparability and consistency within the supervisor's jurisdiction.
- 7.28 *Prudential Requirements:* The insurer must demonstrate that the internal model operates within a risk management environment that is conceptually sound and supported by adequate resources. It also needs to be supported by appropriate audit and compliance procedures. A number of qualitative criteria follow from these minimum requirements:
 - The insurer should have an independent internal risk management unit, responsible for the design and implementation of the risk-based capital model.
 - The insurer's Board and senior management should be actively involved in the risk control process, which should be demonstrated as a key aspect of business management.
 - The model should be closely integrated with the day-to-day management processes of the insurer.
 - An independent review of the model should be carried out on a regular basis. (Amongst other considerations, it should be recognised that evolution of the modelling capabilities is to be encouraged)
 - Operational risks should be considered
- 7.29 *Comparability and Consistency Requirements:* The model's output needs to fit closely with the supervisor's view of key minimum performance criteria, such as probability of default and other important measures of financial soundness. Quantitative criteria relating to these needs could include:
 - A requirement for the model to calculate the capital needed to keep the annual probability of default below a certain level (or levels)
 - An ability for calculating the likely spread of economic costs relating to a range of potential outcomes for the business, etc.
- 7.30 In addition the model should include the capability for specification of the key risk factors for the insurance business. These would include factors relating to both assets and liabilities including:
 - Measurement of cash flows for both assets and liabilities
 - The risk of changes in outstanding claims valuation due to changes in economic, environmental or experience-related factors
 - The risk of changes to the adequacy of premium rates due to changes in economic, competitive or environmental factors
 - Catastrophe concentration risk
 - Expense risk; and
 - The reinsurance security risk and risk of reinsurance cost variability
- 7.31 The model should include a facility to enable comparability of correlation effects between risk classes as well as a system of stress testing and other scenario-based examinations.
- 7.32 The model should be in a format to allow a reasonably straightforward detailed review by appropriately skilled representatives of the supervisor to enable a relatively "painless" approval procedure. Note that the preceding validation criteria should be viewed as minimum requirements and different jurisdictions may require stronger conditions for the validation of models.

7.4.4 Internal Models and the Valuation of Liabilities

7.33 The WP has indicated elsewhere in this report a preference for a Total Balance Sheet approach to the setting of capital requirements. This approach is particularly appropriate in situations where the present value of the insurer's future cash flows can be treated as a random variable whose distribution is derived using an internal model. In this case, policy liabilities can be determined at one point in the distribution and the sum of liabilities and required capital at another. Utilization of the same model, and indeed the same set of calculations, for the determination of policy liabilities also serves to satisfy the requirement expressed in the preceding section that an internal model should be closely integrated with the day-to-day management processes of the insurer and not be used solely for the calculation of required capital.

7.4.5 Internal Models and the Standardized Approach

7.34 There may exist situations in which a stochastic approach is the most natural approach to take in valuing a particular type of liability and determining the associated capital requirement. However, the insurance industry within a jurisdiction may not be at a state of technological readiness that would permit the introduction of internal models by all insurance companies. A possible solution would be to apply a generic model to data collected across the industry. The results of these calculations could be used to determine standardized factors that could be applied to various companies' measures of exposure to the particular risk. Since these factors would apply uniformly across the industry, they would be chosen with a conservative bias. In this way, an internal model could be used to develop a standardized approach for the particular risk. For the larger and more technically sophisticated insurance companies, the conservative bias of the factors would provide incentive to seek early approval for the use of their own internal models.

8. Reinsurance

- 8.1 One of the most important risk management tools available to all types of insurers is reinsurance.
- 8.2 Reinsurance refers to insurance purchased by an insurer to provide protection against some or all of certain risks of the insurance policies issued by the insurer. In exchange for the assumption of these risks, the reinsurer receives payment in the form of reinsurance premiums or allowances from the direct writer of the business, the insurer. The insurer cedes either proportional amounts through quota share and surplus contracts, or losses exceeding a predefined threshold through non-proportional arrangements such as excess of loss or stop loss contracts.

8.1 Reasons for Purchasing Reinsurance

- 8.3 Reinsurance is purchased for different reasons. One can generally distinguish between two main objectives: one is the genuine transfer of risk with the goal of risk mitigation, the other one can be described as a risk transfer for the purposes of managing/spreading risk over time or achieving strategic business objectives.
- 8.4 Genuine risk transfer reasons primarily include
 - Limiting large or catastrophic claims. Such coverage generally provides for the reinsurer to pay claims in excess of a certain limit, subject to a minimum number of claims and subject to a maximum amount of reinsurance per event. This coverage provides protection against concentrated claims arising from a single event (e.g., catastrophic events such as storms, earthquakes, or large loss events like plane crashes, loss of property, etc.).
 - Limiting Total Claims. Some insurers, especially smaller ones, have need of stop-loss reinsurance to limit the aggregate amount of claims in a given year.
- 8.5 Strategic or financial objectives include
 - Increasing new business capacity. One of the most common reasons⁴ for the purchase of reinsurance is to enable an insurer to issue insurance policies with larger coverage limits or amounts than it would prudently issue on its own. If the insurer has no retention limit or it is set too high, the insurer runs the risk of insolvency if several large claims occur in a short period of time.
 - Investment Risk Transfer. Insurers may reinsure a block of business to effect a transfer of investment risk from the insurer. This can occur because of the growth of interest-sensitive life and annuity products to either take advantage of reinsurer asset management capabilities or to avoid a large concentration of assets arising from a single product or annuity.
 - Financial Results Management. Insurers can utilize the financial reporting impact of reinsurance agreements to optimize the insurer's earnings and surplus objectives and also to minimize taxes.
- 8.6 A mixture of both objectives can be achieved by reinsurance arrangements providing for:
 - Gaining Product Expertise. Upon entering a new line of business, product or territory, an insurer may request the assistance of a reinsurer with existing experience in that market. In exchange for their advice, the reinsurer will participate via reinsurance in the future profitability of the business sold.

⁴ Tiller J.E. Jr., Tiller D.F., 1995, *Life, Health & Annuity Reinsurance, Second Edition*, ACTEX Publications Inc.

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- Underwriting Advice. A benefit provided by reinsurers is their experience in underwriting. This can prove valuable during the design, pricing and underwriting of products, especially new, novel, large or complex ones.
- Divesting a Product Line. An insurer wishing to exit from a certain business, product or territory may choose to cede that business by means of an assumption reinsurance agreement or through indemnity reinsurance, thereby transferring a loss portfolio.
- 8.7 Finally, reinsurance is crucial to the viability of many, in particular smaller companies. Small or mono-line companies use reinsurance as a diversification and risk reduction tool, so that they can compete effectively against large diversified companies. Note that reinsurance protection is normally at the price of a reduction in the expected earnings of the cedant. This reduction of expected earnings reflects a "fair price" for the risk transfer. For many companies, buying reinsurance is a good economic decision despite the reduction in expected earnings. For them, the risk reduction from buying reinsurance may outweigh the economic cost of putting up the additional required capital.

8.2 Types of Reinsurance

- 8.8 Reinsurance covers typically have two different types: proportional or non-proportional. Proportional reinsurance covers are quota share of surplus covers, while non-proportional covers comprise excess of loss or stop loss contracts. Both types are often, mixed or aggregated.
- 8.9 A quota share cover assumes a contractually fixed percentage of each and every loss in exchange for the same percentage of premium income ceded by the insurer. This proportional mutual sharing of benefits as well as losses can be adjusted contractually through profit sharing such as sliding commissions and the like. In terms or risk mitigation, quota share reinsurance takes a fixed percentage of each and every loss, thereby simply "compressing" the risk profile. This means that the expected loss, or any percentile (such as the 99th percentile), reduces by the same percentage (i.e., the share ceded to the reinsurer). This is illustrated in the following exhibit.



Effect of Quota Share Reinsurance on Loss Distribution

8.10 Excess-of-loss reinsurance provides that for each and every loss amount exceeding a predefined threshold, the so-called priority or attachment point, (e.g., US\$ 1 mill.) is covered by the reinsurer, up to a certain limit. Under an excess of loss cover with priority *P* and cover limit *L*, the reinsurer assumes for each loss *X* incurred by the cedant:

Max (0 ; Min(*X*-*P*; *L*))

8.11 The effect of excess of loss reinsurance is that it truncates the loss distribution for the cedant at the priority, implying that any loss amount exceeding the priority will be assumed by the reinsurer, subject to not exceeding the limit per claim. This can be easily seen in the following exhibit, for an excess of loss treaty: the XL attaches in excess of 50 million. The net curve shows that there is zero probability of loss amounts higher than 50 million (unless losses exceed the limit) and therefore the distribution has a mass point at the priority. The gross loss distribution, however, extends well beyond 50 million with a 99th percentile at about 85 million.



Effect of Excess of Loss Reinsurance on Loss Distribution

- 8.12 Excess of loss reinsurance applies on an individual claims basis rather than on a portfolio basis like proportional contracts. Repeat coverage for more than one claim is usually achieved through refilling the coverage by paying reinstatement premiums. Excess of loss coverage is provided on a per event basis covering one or multiple claims arising from one and the same event, or on a per risk basis where the coverage applies to one risk independent on the event affecting the insured risk.
- 8.13 Most importantly, the reduction in the expected loss for the excess of loss contract is minimal compared to the corresponding mean reduction of the quota share. However, the risk reduction of the excess of loss contract (e.g., measured at the 99th percentile) is vastly higher at approximately 35 million, while the quota share reduces risk only by approximately 15 million, thereby demonstrating the different transformation characteristics of proportional versus non-proportional reinsurance contracts.

8.3 Effect of Reinsurance on the Risk Profile

- 8.14 As outlined in the preceding section, any analysis of a company's risk profile (and therefore its capital requirement) is incomplete without proper treatments or recognition of its reinsurance arrangements. Reinsurance contracts typically have significant impacts on the company's aggregate risk profile, usually with the effect of reducing risk, and thus are important considerations for the capital requirement of an insurance company.
- 8.15 The following graph illustrates the effect of risk reduction through reinsurance on the company's results, the sum of premiums minus expenses and losses. While proportional reinsurance typically reduces the overall (nominal) risk in a linear way, non-proportional covers typically address the large losses, thereby reducing the company's net exposure to large loss/catastrophic events. Technically speaking, non-proportional reinsurance eliminates part or all of the volatility coming from the tail of the distribution.

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- 8.16 The probability distribution in the above graph shows how the 99th percentile of the probability distribution of losses is shifted to the left, indicating a reduction in risk. Note in particular that the tail of the distribution is reduced materially, if not even eliminated.
- 8.17 Reinsurance, in particular the non-proportional type, can greatly reduce, or even eliminate, the extreme tail of the cedant's loss distribution. This effect can be assessed mathematically if the TVaR risk measure is being used. On the other hand, the reduction in standard deviation (in the WP's opinion this is an inferior risk measure for a capital requirement) can be disproportionately less. If applied properly in a solvency or management context, reinsurance is a very efficient means of reducing risk (particularly if measured by TVaR) and therefore risk-bearing capital. Reinsurance can therefore be a useful alternative for (solvency) capital.
- 8.18 Given the above discussions, it is obvious that a proper recognition of reinsurance is a must to assess the risk reduction for the ceding company with implications for its capital requirements in order to ensure effective supervision of insurance enterprises in relation to solvency and capital requirement.

8.4 Challenges in Assessing the Impact of Reinsurance on a Company's Risk Profile

8.19 While proper treatments and recognition of reinsurance arrangements are necessary to assess the impact of the of a ceding company's risk profile, this is a difficult task for a number of reasons.

- 8.20 The first complexity comes from the tremendous diversity in the types of reinsurance contracts:
 - typical reinsurance arrangements comprise both proportional and non-proportional covers
 - some contracts have variable rating terms, such as sliding scales or loss corridors for a proportional reinsurance treaty, and reinstatements or contingent commissions for an excess-of-loss treaty
 - some contracts cover just one line of business, others cover multiple lines of business and others cover single loss events only
 - some contracts are on an aggregate basis, with aggregate deductibles and aggregate limits
 - some financial type reinsurance contracts cover a hybrid of underwriting and financial risks.
- 8.21 The second complexity comes from the fact that *many reinsurance contracts do not bear a linear relationship with the underlying risks*. For instance, there is a leverage effect of claim inflation on the loss costs of excess-of-loss covers. In fact, the contracts transforming the overall risk into a "narrower" risk profile typically are exactly of this nature. The magnitude of the leverage effect depends on the sizes of the retention (attachment point, or priority) and the limit⁵.
- 8.22 A properly structured reinsurance program can significantly reduce the cedant's risk exposure and capital requirement. However, *not all reinsurance warrants a reduction in the capital requirement*, in particular when it is inadequate. This introduces the third complexity of reinsurance:
 - If improperly designed, a reinsurance program may be inefficient in reducing the total risk of the cedant.
 - Some reinsurance contracts do not contain significant risk transfer and are mainly used for some specific accounting or tax effect. For instance, U.S. statutory accounting does not allow immediate recognition of the equity in unearned premium reserves; this created incentives for some companies to purchase proportional reinsurance treaties with ceding commissions as a surplus relief. As another example, U.S. statutory accounting does not allow for discounting of loss reserves; this created incentives for some companies to purchase loss portfolio transfers to indirectly achieve the effect of loss reserve discounting.
 - Some reinsurance contracts may have credit risk exposures, that is, the loss recoverable may be non-collectable in the cases of contract dispute or reinsurance failure⁶.
- 8.23 The fourth complexity lies in the fact that *the reinsurance recoverable may be highly correlated with the cedant's net risk exposures*. This correlation may go beyond simple linear correlation for excess-of-loss treaties.

8.5 Implications for Recognition of Reinsurance in a Future Solvency System

8.24 The recognition of reinsurance for solvency purposes must be closely linked to the ability of the company, supervisor or both to assess the impact of the reinsurance program of the risk profile. Given the diversity and complexity of reinsurance contracts, it is apparent that a simple factor-based approach is likely to be too crude to reflect the effect of reinsurance on capital requirements accurately. Therefore, standardized (e.g. factor-based) approaches should be used with caution since the proper treatment of reinsurance really requires a modelling approach. Similarly, if the gross risk profile is not, or is only very vaguely described, the proper recognition of reinsurance in terms of risk reduction is not possible.

⁵ While many European countries use an index clause to stabilize the impact of reduction in the risk profile, the index clause is not commonly used in the U.S.

⁶ For a discussion on reinsurance credit risk, refer to section 5 and Appendix E

- 8.25 For the assessment of the reinsurance impact on the risk profile, there are two general methods of evaluating the amount of risk transfer in a reinsurance contract:
 - judging the amount of risk transfer for a reinsurance contract by analyzing whether the cedant has transferred (reduced) risk, *on an enterprise-wide basis*
 - judging the amount of risk transfer for a reinsurance contract by *focusing on a stand-alone single transaction* as defined in the contract.
- 8.26 According to the enterprise-wide approach, the impact of the entire reinsurance program on the risk profile needs to be evaluated. The assessment of individual contracts on a per risk or line of business basis, particularly of an excess of loss nature, is practically impossible. However, for proportional transactions, such as especially whole account quota shares, or stop loss, agreements can be evaluated on an approximate basis. For example, a whole account stop-loss limits the maximum downside of the underwriting result and thus, assuming the reinsurer performs, the maximum capital at risk can be quantified.
- 8.27 Except in the case of a stop-loss arrangement, a risk-based solvency assessment is impossible in the absence of reliable aggregate loss distribution data and exposure information. In this situation, a prudent supervisory approach would be to give no credit for the purchase of reinsurance.
- 8.28 This said, most companies have some exposure information for at least a few lines of business. Typically, property lines have at least exposure profiles and these can be used as a proxy. In addition, those profiles could be compared to industry data where available and blended to achieve a proxy for the company's risk profile. Combining the profile of several lines in an additive manner, thereby not allowing for diversification effects and introducing a level of conservatism to the proxy, an approximate total company profile could be derived.
- 8.29 Provided that an adequate internal enterprise-wide risk model is available however, one can evaluate the effect of all reinsurance contracts in a consistent manner. Basically, one can use the internal model to evaluate the total capital requirement on a gross basis (without reflecting reinsurance), and then on a net basis (net of reinsurance). Presumably, the internal model can reflect all the intricacies of the reinsurance contract terms. The enterprise-wide method is desirable from a total balance-sheet modelling perspective. However, it can be quite a challenge to model all parts of an enterprise and their interactions properly.
- 8.30 In summary, in the absence of an internal enterprise-wide model the risk reduction relative to an expected shortfall measure is virtually impossible to quantify reliably, with the possible exception of a stop-loss arrangement, and in such circumstances the reinsurance credit should be minimal or not given at all.
- 8.31 For the assessment of the risk transfer under a particular reinsurance contract, one can perform the risk modelling of the cash flows between two parties based on the contract terms, without referring to a full enterprise-wide model. This can be a much more pragmatic method when a satisfactory enterprise-wide model is not available. In practice, many companies have adequate partial risk models describing the risk profile for some of their segments. This is particularly the case for property coverage.
- 8.32 In those cases, the risk characteristics can be described by segmenting the underlying contracts into homogenous "risk buckets" describing the exposure of the underlying risks in terms of insured value, retention, policy limit and maximum loss/PML, to name a few. This data can then be used to derive a gross risk profile of the portfolio to be insured using frequency and severity/expected loss information. These gross loss distributions can be used to adequately apply proportional reinsurance transactions including loss-sensitive features as appropriate⁷. This said, the proper evaluation of the risk reducing impact of non-proportional reinsurance contracts

Refer to the case study for non-life insurance for a general approach to practically apply such a routine.

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is still not possible without either relatively complex mathematical transformations, which are typically beyond the of supervisory control mechanisms, or the use of simulations, which are standard routines for more complex risk modelling in internal models.

- 8.33 Ultimately, the most adequate assessment of the risk transfer capability of a reinsurance contract or a combination of several contracts, is through the description of risk using detailed loss and exposure data. From this information, possibly blended with industry data, the company can derive specified and validated loss distributions. These gross distributions can then be fed into routines transforming gross simulated loss samples into a net distribution by applying the relevant reinsurance terms to each figure and aggregating the transformed simulations into a net outcome. While this approach is obviously laborious and more time-consuming than the other approaches outlined above, it more adequately and reliably describes the risk reduction achieved by reinsurance.
- 8.34 While the approach described above can be applied for each "risk bucket" (e.g., line of business), it does not resolve the aggregation of the individual risk profiles into a total company profile as this process would need to consider dependencies between risks, like concentration or diversification. A discussion of this issue, and possible solutions, are presented in the following sections of this report.
- 8.35 In summary, the WP concludes that the possibility to adequately reflect the risk reducing impact of reinsurance crucially depends on the ability to reliably come up with a risk profile of the portfolio to be reinsured. The less information is available and the cruder the model is, the less adequately the impact of reinsurance can be assessed, and consequently, the less credit should be given. Conversely, detailed and consistent risk information enabling a company to describe its risk profile properly (e.g., such as in an internal model even if it is only for part of its business), allows the evaluation of the impact of reinsurance and the corresponding credit for the purpose of solvency assessment, to be given proper consideration by the supervisor.

8.6 Reinsurance Credit Risk

- 8.36 Reinsurance arrangements often generate a long-term relationship between cedant and reinsurer. The reinsurer typically collects premium at contract inception and remunerates for losses falling under the policy as they are reported and paid. Obviously, the stability of the relationship crucially depends upon the financial strength of the reinsurer. Occasionally, reinsurance recoverables are not collectible as the reinsurer is either unable or unwilling to perform (i.e., when the reinsurer becomes insolvent or there is dispute regarding the coverage).
- 8.37 To recognize the credit risks on the reinsurance recoverable, a factor θ (say, $\theta = 70\%$) can be applied to the full amount of capital relief derived from having a reinsurance arrangement in place. The factor θ may vary depending upon
 - the financial stability of the reinsurer (e.g., as expressed in quality rating)
 - the amount of collateral being posted
 - the nature of the reinsurance (i.e., short versus long tail)
 - concentration risk (one reinsurer versus several)
- 8.38 The charge for reinsurance recoverable, θ , should be in line with the charge for bond defaults with similar default frequencies

8.39 As a consequence, the net capital requirement for the ceding company after reinsurance can be derived very simply and is equal to (assuming a linear ρ):

$$\rho(X) - (1-\theta) \ \rho(X_{\text{cede}}) = \rho(X_{\text{net}}) + \theta \ \rho(X_{\text{cede}}).$$

8.40 Where ρ denotes the risk measure applied (eg. Tail Value at Risk) and *X* denotes the aggregate loss.

9. Total Company Requirement

9.1 Concentration

9.1 Concentration risk is the risk of having higher-than-normal relative risk exposure in a single risk. For example, investment of a high proportion of assets in a single economic sector might be considered concentration. In practice, concentration risk can result in a "penalty" in capital requirements; that is, more capital is required. Concentration is the opposite of diversification.

9.2 Diversification

9.2 Diversification reduces risk to the extent that less total relative capital is required when combining two risks. In practice, diversification benefits should be reflected in a capital formula to encourage insurers to have more diversified assets and liabilities.

9.3 Risk Dependencies

- 9.3 The risks an insurer faces often exhibit comovement or dependencies. This means that knowledge about results for one risk can be used to better predict the results of another risk. Dependence between two risks may be because there are known relationships between these two risks or simply because certain correlations or other relationships have been observed historically. Dependence can increase or decrease the capital required to support the combined two lines. If losses for one risk tend to increase as the losses for the other increases, there is a positive correlation, usually resulting in more capital required than if the two risks are mutually independent. Similarly, if one tends to increase as the other decreases, the two risks form natural hedges and usually require less capital. If an insurer builds an internal model, it needs to reflect the nature of all significant dependencies. Similarly, with factor-based models, the formula used to combine risks needs to reflect all significant dependencies.
- 9.4 As in previous sections, we consider the total risk to which an insurance company is exposed (e.g., stemming from its insurance operations, investment activities, currency movements, etc.). Typically, the risks to which a company is exposed are not independent, but rather have some, sometimes minor and often difficult to observe, interaction. In many cases and unlike to financial markets, there is very little historical data to detect and quantify the real relationship between risk factors. Hence, it may not be possible to identify all sources of interaction and build them into an internal model or even estimate their correlations or related measures of interactions.
- 9.5 The comovement of risks faced by an insurer can be the result of two general types of dependencies: structural or empirical. The structural comovements are due to known relationships, which can be accounted for in a modelling exercise; while empirical comovements are simply observed without any known (or capable of being modelled) relationships. Structural dependencies include situations where loss variables are driven by common variables. For example, economic factors like general economic inflation can drive costs in various lines of insurance in the same direction. Similarly, common events or "shocks" such as an automobile accident, can trigger several related claims (bodily injury, property damage, etc) simultaneously. Other common factors can drive losses in opposite directions. For example, improving mortality reduces costs for life insurance while increasing costs for life annuities.

- 9.6 In addition, the degree of dependency of insurance risks leading to comovement may increase in extreme outcomes of the risk. Actual examples in insurance include the catastrophes of September 11 affecting not only aviation insurance, but also property, business interruption, workers compensation, life, personal accident and several other lines of business. Similarly, it is easy and logical to imagine that major natural catastrophe, such as a California earthquake occurring on a weekday morning, would affect both property (catastrophe) insurance as well as workers compensation, lines of business that are typically regarded as largely independent (the company may also own property in a catastrophe area).
- 9.7 Structural dependencies can be modelled directly in internal models and reflected appropriately in factor-based formulas. This is illustrated in one of the case studies where the level of claims costs is determined by a common inflation risk factor. In this case, all claims will be larger if there is general inflation. The uncertainty about the level of claim amount (i.e., inflation) is the uncertain risk factor.
- 9.8 For many types of risks, particularly in property and liability areas, correlation in movements are observed, but may not be easily explained. In many cases, correlation may be understood by general reasoning, but may not be easily measured due to scarcity of data. This is especially the case for rare events, which may trigger various types of claims.
- 9.9 It is therefore necessary to find methods or models to describe dependencies both in the absence of reliable or scarce data as well as the increasing dependency in extreme events, i.e. in the tails of the probability distributions describing the risks. It may be possible to model dependencies directly if their nature is well understood. However, it is more likely necessary to construct dependency models that reflect observed and expected dependencies without formalizing the structure of those dependencies with cause-effect models. The theory of copulas provides a comprehensive modelling tool that can reflect dependencies in a very flexible way.
- 9.10 While structural dependencies are modelled directly in an internal model, empirical dependencies are most easily modelled using specific dependency models called copulas. Copulas describe the relationship between the quantiles of distributions of different risks. They can be selected in order to recognize so-called "tail dependencies" where dependencies only occur, or only appear, in extreme circumstances. Appendix I gives an overview of some technical aspects of dependency modelling using copulas.

Appendix A Life Insurance Case Study

A.1 Introduction

- 1.1 This life insurance company case study has been prepared by the WP to illustrate some of the concepts discussed in this report. The main purpose of the case study is to describe calculations that a company might undertake in order to determine total solvency provisions for various risks, and to highlight some of the issues in these calculations.
- 1.2 The case study describes what might be considered an advanced approach, through the use of an internal company model to quantify the risks. Standardized approaches can be implemented as an approximation to the more advanced approaches, or as a minimum capital requirement, in the event that advanced internal modelling is not possible
- 1.3 With this objective in mind, the ultimate goal of this case study is to illustrate some of the concepts for advanced internal modelling, and to highlight some of the issues that standardized approaches must address in their formulation.
- 1.4 The case study has been designed with a focus on advanced models because of the complex nature of the life insurance business relative to shorter duration businesses such as banking or non-life insurance. Generally, the risks facing life insurers are of long duration, and tend to have complex interactions between them. In addition, there are a wide variety of products and management practices in different jurisdictions around the world. Thirdly, it is difficult to find simple common risk metrics can be used in a standardized approach. It would be overly simplistic, for example, to use sum assured as a base to apply factors, because this does not reflect important risk factors such as age or sex. A basis such as premiums might reflect these risk factors but also introduce the company's pricing philosophy in the local market into the equation, which would further complicate the factor development process. Another basis might be a prospective cash flow based valuation performed on a best estimate basis. This type of basis would again capture all the relevant risk factors, but introduces additional complexities such as what to do where the resulting liabilities are negative, or do not fit into the industry norms in some way (e.g., unusually large or small liabilities).
- 1.5 These characteristics make it difficult to create a simple standardized model that appropriately captures all risks across all jurisdictions. The starting point for developing a standardized approach in any particular jurisdiction would be to first understand how the risks behave using a more complex advanced model. This advanced model could then be simplified to arrive at a standardized approach.
- 1.6 There are two types of standardized models that could be conceived. The first could be described as a pure standardized approach, in which factors are developed that companies can apply to common exposure measures such as premiums, face amounts or liabilities. The second can be described as an assumption-based approach, in which capital is determined by re-valuing the liabilities using specified assumptions. In some situations, one approach might be preferable to the other. For example, it is possible to measure mortality volatility risks on a pure factor basis, because the risk is short-term in nature. Longer duration risks, such as mortality level risk, might be more appropriately capitalized using an assumption-based approach, in which the regulator requires capital based on the difference between liabilities established using a specified assumption used in deriving the liabilities.
- 1.7 The remainder of this case study focuses on advanced modelling approaches, with some discussion of the approaches that might be taken to derive a standardized approach.

A.1.1 Advanced Approach (Internal Models)

- 1.8 In this case study, the advanced approach is defined as the product of an internal model to quantify the various risks being considered. The general approach in this model considers each risk one by one, and quantifies the probability distribution of "liabilities", that result from each risk being considered. The solvency requirement for a particular risk is derived from this distribution, such that there is a high probability that the actual liabilities will prove to be less than the solvency requirement, in respect of that particular risk. The resulting solvency requirements for each risk are then aggregated into a total company requirement, taking into account the correlation between the various risks.
- 1.9 It is important to note that the case study focuses on the total solvency provisions, without regard for the allocation of these solvency provisions between liabilities and capital. The focus is on the quantification of the total provision for risk that is needed to establish a high confidence that the risk will be provided for, without worrying about the specific accounting implications.
- 1.10 The liabilities are defined in these calculations as the present value of future liability cash flows, discounted at the risk-free rate. All of the assumptions used in projecting the liability cash flows are the Company's best estimate of future experience, except for the assumption / risk that is being evaluated. For the risk being evaluated, the internal model varies the assumption and/or cash flows according to some underlying stochastic process, depending on the specific risk. This process generates scenarios in which the liabilities vary based only on the risk being measured. The probability distribution of liabilities is then tabulated, and the solvency provision is established.
- 1.11 Several specific points should be noted:
 - The liabilities that are being modelled are defined on the basis of cash flows over a time horizon appropriate to the risk being modelled. With systematic (non-diversifiable) risks, such as misestimation of mortality parameters for example, the time horizon is the entire term of the liability. Non-systematic (diversifiable) risks, such as mortality volatility, are based on a 1-year horizon, which is the assumed length of time that a regulator requires to react to an adverse situation if necessary.
 - The solvency provision for a particular risk is defined as the difference between the average liabilities that result under the worst 1% of scenarios, and the best estimate of liabilities. This is referred to as CTE (99) minus CTE (0), where CTE stands for "conditional tail expectation". For the risks covered in this case study, this is approximately equivalent to establishing capital at the 99.5th percentile of liability outcomes.

A.1.2 Standardized Approaches

- 1.12 Standardized approaches are less complex than the advanced internal model approaches. Such approaches can perhaps better be characterized as "assumption based" systems with respect to the establishment of liabilities (i.e., reserves), and as largely "standardized" systems with respect to the establishment of required capital.
- 1.13 In Canada, for example, policy liabilities are defined on the basis of the statement value of assets exactly needed to mature the liabilities with no resulting surplus, under adverse liability and economic scenarios. In projecting the liabilities, the actuary has some discretion, within bounds, of risk-adjusting the liability cash flows. Because the liability cash flows for life companies generally extend well beyond the duration of currently existing assets, further assumptions must be made about the reinvestment of future cash flows and assets to meet those obligations. The general intent is to model the actual reinvestment strategy followed by the Company, under various future economic scenarios. The actuary must perform this calculation for a certain number of prescribed scenarios, and can optionally perform additional scenarios. The final

liability that the actuary reports must equal statement value of assets needed to mature the liabilities under at least the highest of the prescribed economic scenarios.

- 1.14 Having established liabilities as above, the Canadian Company will report surplus as the assets in excess of liabilities. This surplus must exceed certain "Minimum Capital" requirements by a margin of 150%. The Minimum Capital is generally the result of applying factors to exposure bases. For example, capital for asset default risk is the result of factors applied to book value of assets, while the capital for mortality risk is the result of factors applied to the net amount at risk.
- 1.15 The Canadian approach, as for most jurisdictions, is focussed on the allocation between liabilities and capital. Conceptually, some risks are provided for in the liabilities and not in capital, whereas other risks are provided within capital and not in the liabilities. For example, provisions for the misestimation or deterioration of the mortality assumptions, is entirely within the liabilities. By contrast, provisions for volatility and catastrophe are entirely covered by capital, and not by the liabilities.
- 1.16 It is worth noting that any standardized approach will not fully capture the characteristics of the risks being evaluated, and may in fact produce misleading results.

A.1.3 Risks Covered by Case Study

1.17 Provisions are established in the case study for the following risks. These are described in additional detail in the following sections:

Mortality (Systematic Risks)

- Misestimation of the mean, i.e., the risk that the assumed best estimate mortality assumption in the liability calculation is not the true best estimate (statistical error)
- Trend, i.e., the risk that future mortality deteriorates (or improves) relative to the current date, in a manner different than we expect in our best estimate

Lapse (Systematic Risks)

 Misestimation of the mean, i.e., the statistical error associated with establishing the best estimate lapse assumptions

Non-Systematic Insurance Risks

- Mortality volatility risk
- Catastrophe risk (mortality)
- Lapse volatility risk

Market Risks

- Credit risk on assets supporting both liabilities and surplus Mismatch risk, or ALM risk, associated with the cash flow mismatches between liabilities and associated assets
- 1.18 Additional risks can also be considered, but were not in this case study to keep our sample company relatively simple. Of these risks, the most significant is the lapse risk caused by policyholder behavior and in particular, its interaction with changes in economic variables. This is an area where more experience is needed in extreme economic environments. It is also one risk that is very difficult to reflect appropriately on a purely factor-driven basis.

A.2 The Insurance Company

- 2.1 The company (i.e., the Company) constructed for this case study can be described as a medium sized insurance company that offers relatively simple term and whole life insurance products to its generally diverse customer base. It has experienced steady, but growing, sales over the past 15 years. In addition, the Company issues an immediate annuity product to retirees. All products are issued on a non-participating basis, and the Company has no equity-linked or interest-sensitive products, such as universal life. A simplified insurer has been used to illustrate the basic concepts.
- 2.2 Assets are managed at the segment level, with separate segments existing for the insurance products, annuity products and surplus. The Company generally invests in high grade fixed income securities to support the liabilities, but is more aggressive with its surplus, investing in common and preferred stocks in addition to fixed income securities.
- 2.3 The case study assumes the Company has various reinsurance arrangements in place, on one of its product lines (see the section entitled "Reinsurance Considerations"). First, the Company is considered on a gross of reinsurance basis.

Product Code	Type of Product	Number of Lives	Sum Assured or monthly payment
ALC 1001	Term to 100 insurance	56,971	3.6 Billion
ALC 1002	Non-par Whole Life	5,000	0.9 Billion
ALC 1003	Term to 100 insurance	94,560	9.0 Billion
ALC 1004	ALC 1004 1 year renewable Term		1.4 Billion
ALC 1005	ALC 1005 5 year renewable term		0.5 Billion
ALC 1007	Payout Annuities	250	1.5 million / month

The chart below summarizes some of the key features of this company.

2.4 On a Canadian GAAP basis, the balance sheet of the Company at December 31, 2002 can be summarized in the following table:

Balance Sheet at December 31, 2002 (Canadian GAAP Basis)

		Insurance	Annuity	Total	Surplus	TOTAL
Assets						
Cash and sho	ort term	89,304	21,347	110,651	19,116	129,767
Government E	Bonds	374,230	44,418	418,648	242,541	661,189
Corp Bonds	AAA	71,316	32,506	103,822	32,101	135,923
	AA	195,627	62,306	257,933	74,609	332,542
	А	101,963	57,284	159,247	46,460	205,707
	BBB	61,559	30,231	91,790	19,844	111,634
Total		893,999	248,092	1,142,091	434,671	1,576,762
					=	
Liabilities	Actuarial	887000	249000	1136000	0	1,136,000
	Other	24000	2600	26600	5750	32,350
		911,000	251,600	1,162,600	5,750	1,168,350
Surplus	Common Shares					250,000
	Retained					158,412
	Total					408,412
Total Liabiliti	ies plus surplus				-	1,576,762

A.3 Total Company Solvency Provisions

A.3.1 Summary of Total Company Provisions Using Internal Models

- 3.1 This section describes how an internal model might be used to quantify the various risks. First, the results of all of the calculations are summarized, then the details on each risk are explained. In each section, are presented some considerations in determining capital using standardized, or standardized, approaches.
- 3.2 The table below summarizes the solvency provisions generated by our internal model, for each risk/product type, and in aggregate at the Company level. Several points are worth mentioning or repeating. First, the figures in the table are the total solvency provision needed in addition to the best estimate liabilities. These figures are not estimates of the liabilities themselves, but estimates of the capital. Second, these are based on the present value of cash flows discounted at the risk-free rate, at the CTE 99 level. Third, not all risks have been quantified explicitly for each product segment. For market risk, the analysis was performed at the level at which the risk is managed, at the asset segment level. Finally, these capital provisions have been estimated separately for each type of risk and product. At the Company level, these separately determined provisions have been aggregated using methodologies described in section 3.1 "Risk Aggregation".

	System	natic Insurance	Risks	Non-sys	tematic Insurar	nce Risks	Market Risks		
	Mortality	Mortality	Lapse	Mortality	Mortality	Lapse			
	Level	Trend	Level	Volatility	Catastrophe	Volatility	Mismatch	Default	TOTAL
ALC 1001	43.1	50.1	28.9	3.4	6.2	3.5	-	-	73.7
ALC 1002	43.8	17.4	7.1	3.3	3.8	3.2	-	-	49.2
ALC 1003	105.7	163.6	103.3	9.5	35.1	10.9	-	-	227.5
ALC 1004	53.1	37.6	39.9	21.5	3.5	12.8	-	-	86.3
ALC 1005	8.6	5.8	3.9	3.9	4.4	2.1	-	-	14.8
Total Ins	-	-	-	-	-	-	335.7	-	335.7
ALC 1007	16.8	8.7	-	0.2	(0.1)	-	15.7	-	24.7
Surplus	-	-	-	-	-	-	-	-	-
TOTAL	178.8	265.8	152.8	29.7	53.0	26.1	351.4	11.5	511.6

Total Solvency Provisions at December 31, 2002

3.3 In the table above, the total solvency provisions have been determined by assuming a matrix of correlations between types of risk and between products. The total solvency provisions result from the multiplication of these matrices.

A.3.2 Techniques to Aggregate Risk Provisions

- 3.4 There are several techniques that can be used to aggregate risks at the Company level. The most ideal solution, that is also the most difficult to achieve in practice, is to develop an internal model that reflects all correlations and dependencies between all risks and product types. The output of such a model would be total solvency provisions at the company level. With such a model, there is no need to make estimates or approximations about the manner in which risks are inter-related, rather there would be a need to develop approximate methods to reallocate the total capital requirements to the product/risk level. For most life companies, this approach is not feasible.
- 3.5 Another approach is to use copulas to aggregate the risks. As described elsewhere in this report, copulas are mathematical functions that describe the relationship between risks.
- 3.6 The approach taken in the case study is an analytic approximation, in which each risk and product is first modelled independently, and then simplified correlations between the risks are developed based on intuition, benchmarks and historical data where available. It was assumed that the economic capital for the combined distribution of all risks in Company could be approximated by the formula

$$EC_{T} = \overline{\sum \sum EC_{i} \times EC_{j} \times \rho_{ij}}$$

- 3.7 Where ρ_{ij} represents the correlation between risks *i* and *j*, and *EC_i* and *EC_j* represents the amount of capital that has been determined for risks *i* and *j* on a stand-alone basis.
- 3.8 The first set of assumptions made relates to the correlations between products, given a particular risk being evaluated. For example, if mortality volatility risk is evaluated at a high confidence level such as the 99th percentile or higher, the subjective assumption might be made that each product is 25% correlated with each other. In other words, the assumption is made that extreme levels of volatility have some effects on all product lines. At lower confidence levels (i.e., under normal operating conditions), a different assumption might be made, such as that the volatility risk is independent across product lines. The specific assumptions used are shown in the table below. Note that no assumption need be made for market risk (credit risk and mismatch risk) because these are modelled at the company or segment level. Note also that a simplifying

assumption is made that each product is correlated in the same way, for a given risk. For example, all products are 25% correlated with each other with respect to the mortality level uncertainty risk. If a more complicated assumption is desired (e.g., perhaps different products have different degrees of correlation), then it would be necessary to create a separate covariance matrix for each risk type.

Correlation Between Product Lines					
Risk	Correlation				
Mortality level uncertainty	25%				
Mortality trend uncertainty	100%				
Mortality volatility	25%				
Mortality catastrophe	100%				
Lapse level uncertainty	50%				
Lapse volatility	50%				

- 3.9 Application of these correlations to the separately determined economic capital figures gives the combined capital measure for all products, given a particular risk type.
- 3.10 Next, we make an assumption about the degree to which the risks themselves are correlated. This is shown in the following table:

Risk Correlations								
	Mortality	Mortality	Lapse	Mortality	Mortality	Lapse	Mis-	Default
	Level	Trend	Level	Volatility	Catastrophe	Volatility	match	
Mortality level	1	0	0	.25	0	0	0	0
Mortality trend	0	1	0	0	0	0	0	0
Lapse level	0	0	1	0	0	.25	0	0
Mortality volatility	.25	0	0	1	1	0	0	0
Mortality catastrophe	0	0	0	1	1	0	0	0
Lapse volatility	0	0	.25	0	0	1	0	0
Mismatch	0	0	0	0	0	0	1	0
Default	0	0	0	0	0	0	0	1

- 3.11 For example, it might be assumed that mortality volatility risk is weakly (25%) correlated with mortality level uncertainty risk, reflecting the fact that estimates of future mortality levels are at lest partially based on historical observed mortality, which is volatile.
- 3.12 The combined company level capital is then determined by applying this covariance table to the matrix of capital determined for each risk type.

A.4 Solvency Provisions for Mortality Risk

A.4.1 Mortality Level Risk (Misestimation of the Mean)

A.4.1.1 Internal Model

- 4.1 The Company derives best estimate mortality assumptions for each product segment in the portfolio. These best estimates are based on mortality studies, which are assumed to be derived from the same portfolio being evaluated. In practice, smaller portfolios would not rely entirely on their own experience data in establishing a mortality assumption. It is assumed that the mortality study has resulted in the creation of a mortality table that varies by age, duration and calendar year.
- 4.2 The mortality study is based on observations that, by nature, are volatile. The more volatile the observations, the higher the uncertainty in the underlying level of mortality assumption. Higher uncertainty can arise in smaller portfolios as well as in portfolios that are highly skewed in their distribution of insured amounts.
- 4.3 In doing a mortality study, it is presumed that the historical observations represent the best estimate level of mortality. It is possible however, that the observations are not a best estimate, but are somewhere in the tail of the true distribution. By assuming that the observations were actually at, say, the 95th percentile of the true distribution, the implied best estimate assumption can be solved for that could have resulted in such an observation. This can be done using an inverse Normal Power approximation ⁸ or as an approximation, by simulating the claims experience of the underlying portfolio for the same period of time as the length of the mortality study, and observing the 95th percentile of that distribution.
- 4.4 The approach taken in this case study is in fact to determine the mortality assumption that would be needed at several percentiles of confidence, using the Normal Power approximation. The liabilities are revalued under of each of these assumptions, keeping all other assumptions at the best estimate level. The table below illustrates the range in possible mortality assumptions that result. In all cases, the Company's best estimate of future mortality is 70% of the industry table, and what is being measured is the degree to which this best estimate could be wrong. From this table, it can be seen that the smaller the portfolio, the larger the range of possible outcomes for future mortality. In practice, a company might also partially rely on industry data using credibility theory. This adds an additional level of misestimation risk into the process that has not been considered here. It has been assumed that the Company sets mortality based solely on its own results.

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⁸ van Broekhoven H. 2002, Market Value of Liabilities Mortality Risk: A Practical Model, North American Actuarial Journal

Mortalit	Mortality Assumptions at Various Confidence Levels							
	Group 1	Group 2	Group 3,4,5					
Lives	56,791	5,000	103,000					
μ/σ	.19	.39	.14					
γ	.85	.76	1.35					
Percentiles:								
5%	60%	52%	63%					
15%	64%	58%	66%					
25%	66%	63%	67%					
35%	68%	66%	69%					
45%	70%	69%	70%					
50%	70%	71%	70%					
55%	71%	72%	71%					
65%	73%	75%	72%					
75%	74%	79%	73%					
85%	76%	84%	75%					
95%	80%	92%	77%					

- 4.5 For example, at the 50th percentile, the mortality assumption being tested is approximately 70% of the Industry table (71% in the case of ALC 1002). Note that the 50th percentile is not necessarily equal to the best estimate of 70% because of skewness in the portfolio. At the 95th percentile of confidence, the liabilities would be recalculated using 80% of the table for ALC 1001, and only 77% for ALC 1003.
- 4.6 The liabilities are revalued at these (and additional) percentiles and a range of possible liability results are derived. In the model, a statistical distribution of the liabilities is determined that best fit the liabilities at the percentiles that have been explicitly calculated. This is done so that the distribution of liabilities can be filled out and the results aggregated with other risks and/or product types if desired. It is not strictly necessary to do this, if all one was concerned about was the liabilities could have simply been revalued at the 99.5th percentile of assumptions, and the difference taken between this and the best estimate liability as the solvency capital for this risk. In effect, this is being done in our case study as well, except that the rest of the distribution is being filled out.

	ALC 1001	ALC 1002	ALC 1003	ALC 1004	ALC 1005	ALC 1007
Percentile:						
5.0	124.4	31.2	736.3	(267.1)	(27.8)	271.9
25.0	144.2	46.8	787.0	(241.6)	(24.0)	267.9
45.0	154.9	55.8	817.3	(228.4)	(21.9)	266.2
50.0	157.2	57.7	824.2	(225.8)	(21.4)	263.8
55.0	159.6	59.8	831.3	(223.0)	(20.9)	261.7
75.0	170.0	68.9	860.6	(211.1)	(19.0)	255.6
95.0	185.2	84.9	900.8	(191.5)	(15.8)	252.5
97.5	189.7	89.9	912.5	(186.1)	(14.8)	251.8
99.0	195.4	95.7	921.4	(179.2)	(13.7)	251.0
99.5	198.7	99.8	926.8	(174.9)	(13.2)	248.0
99.9	204.2	110.5	934.8	(167.1)	(12.1)	243.0
	-	-	-	-	-	-
σ	18.4	16.3	50.1	22.8	3.7	5.7
σ/μ	11.8%	28.1%	6.1%	-10.0%	-17.0%	2.3%
ratio: 99.9 / mean	130%	191%	114%	74%	56%	108%
CTE(99) - CTE(0)	43.1	43.8	105.7	53.1	8.6	16.8

Liabilities at Various Percentiles – Level Uncertainty Risk (Millions)

- 4.8 Capital is determined as the CTE (99) less the CTE (0), or best estimate liabilities. For example, ALC 1001 has a best estimate liability of 157.2 million at an assumption of 70% of the mortality table. At the 99.9th percentile, however, which is 86% of the table, the corresponding liability is 204.2 million. Capital is based on the average of all liabilities in excess of the 99th percentile.
- 4.9 Two other points are worth making:
 - 1. The liabilities for two of the product lines are in fact negative. These two lines are the 1 year and 5 year renewable term liabilities, which are generally profitable at all ages and durations. As such, the premiums exceed the claim and expense amounts by a significant margin, and the corresponding present value of net liability cash flows is negative. If the company adopts a fair value, or cash flow based valuation system, then these negative reserves represent future profits that are being front-ended. In spite of this, the solvency capital is a positive number, because revaluing the liabilities under a more adverse mortality assumption results in a higher (i.e., less negative) liability.
 - 2. For the annuity line (ALC 1007), the liability amounts decrease with increasing percentiles. This is because the percentiles measure the mortality assumption, and not the corresponding liability amount. For example, the 99th percentile liability figures shown in the table correspond to mortality assumptions at the 99th percentile of possible assumptions (i.e., in excess of the mean), based on the Normal Power approach described above. For some product lines, this results in an increased liability, whereas for other product lines, this results in lower liabilities with higher mortality. Products such as this offer some natural hedging of this risk for the Company.

A.4.1.2 Considerations for Standardized Approaches

- 4.10 Level uncertainty risk is an example where an "assumption based" approach would be more appropriate than a pure factor-based approach. For example, one possible approach would involve quantifying the liabilities on two bases: (1) best estimate mortality; and (2) mortality at a more conservative level, where the specific assumption would be a multiple of the best estimate assumption (100% plus a number of standard deviations, based on the confidence level desired).
- 4.11 To apply this method, the regulator would prescribe only a confidence level requirement, such as CTE(99), which can reasonably be approximated as the 99.5th percentile for most mortality risks. It would be up to each company to estimate the standard deviation of annual claims that can be expected from its specific portfolios, and to determine the more conservative mortality assumption to use.
- 4.12 A more restrictive approach might be to prescribe the additional mortality itself, rather than simply prescribing the confidence level. For example, the regulator might prescribe a solvency level of mortality as the best estimate plus a constant divided by the expectation of life. The constant to be added might vary from a low to a high range, depending on characteristics of the portfolio, such as credibility or homogeneity. Alternatively, the constant might not vary with the expectation of life, but simply be a flat additional percentage of mortality that applies to all ages. These constant factors would need to be sufficiently conservative to capitalize typical companies in the jurisdiction. In other words, in deriving the constant additional mortality, the regulator would be making an implicit assumption about the risk profile / standard deviation of portfolios in the jurisdiction, and testing the capital factors against this profile.
- 4.13 A "pure" factor-based approach would be the next step in this development, but would have to be developed with caution. Under this approach, the regulator would determine the capital using the assumption-based approach as above, but would express the capital as a percentage of an exposure base. The challenge is to develop an appropriate exposure base.
- 4.14 Consider this hypothetical example, in which the regulator has developed factors to be applied to "best estimate liabilities", being the present value of future liability cash flows using best estimate assumptions. These factors have been developed using "typical" portfolios in the jurisdiction. The table below illustrates both the assumption-based approach and the factor-based approach. In the assumption-based approach, the best estimate liabilities would be revalued using revised mortality assumptions as a percentage of best estimate mortality, where the factors vary based on the risk profile of the portfolio. In the factor-based approach, we apply the factors in the table below to the best estimate liability itself. Here, the factors would also have to vary by product type, or some other measure that captures the characteristics of the underlying cash flows (e.g., duration). For example, a portfolio of annual renewable term insurance (T1), whose risk profile was 0.05 standard deviations per average claim, could determine the total solvency provision under the assumption based approach by valuing the liability at 107% of best estimate mortality. Under the factor-based approach, total solvency provisions equal to 140% of the best estimate liability could be established.

	Assumption- Based	Factor-Based				
Risk Profile	% of Best Estimate Mortality	% of Best Estimate Liability				
σ/μ	All products	T-100	T-1	T-5		
.00	100%	100%	100%	100%		
.05	107%	107%	140%	109%		
.10	114%	113%	175%	117%		
.15	122%	120%	215%	125%		
.20	130%	125%	250%	135%		

4.15 For the Company, the assumption-based approach is essentially equal to the internal model approach, given that the assumption-based approach was set using the same approach as the internal model. The factor-based approach, however, produces dramatically different results, because the portfolios in the Company are different from the portfolios by which the factors were developed. This highlights the reason why the use of best estimate liability as an exposure base against which to apply factors could be problematic.

A.4.2 Mortality Trend Risk (Deterioration of the Mean)

A.4.2.1 Internal Model

- 4.16 An important part of the best estimate mortality is the trend. The significance of the trend assumption in establishing a liability is influenced by the remaining duration of the portfolio, (and any periods for which mortality is guaranteed, for example through reinsurance, or through guaranteed annuity payments).
- 4.17 The "best estimate trend" can be estimated based on observations in the past, sometimes including expert opinions. The resulting trend will of course be uncertain. This uncertainty can be split into two parts. The first part exists because of the fact that the observations from the past will have been volatile. This volatility (movement around a certain level) will also exist in the future. The second part of the uncertainty trend is caused by systematic changes in the trend, for example due to medical developments, new diseases (like AIDS), and environmental changes. This uncertainty will increase looking further in the future.
- 4.18 Mortality rates are highly correlated between various ages and genders. The development of mortality rates is correlated between ages and genders. The degree of correlation itself varies over time. For this reason, it would be highly speculative to put forward a model that tries to directly estimate future mortality rates, as this would require too many assumptions. Instead, we would ideally like to indirectly quantify trend uncertainty by revaluing the liabilities using historically observed trend assumption tables. Analyzing the impact on the liabilities of the several variants of the trends observed in the past can give us an idea of the uncertainty trend. The impact of the correlation between ages, gender will be automatically included in the analyses. Generational mortality tables with trend assumptions built in to their construction can be useful.

- 4.19 An important factor in these analyses is the duration of the trends being reviewed. For an insurance portfolio with a remaining duration of n years we have to analyse what can happen with the trend over a period of n years. To do this, we observe as many historical trends with the same duration as the data will allow. Each of these trends can be used to recalculate the liabilities.
- 4.20 It is quite possible that sufficient historical observations do not exist, and that if they do exist, they do not capture the spectrum of possible outcomes. In Canada, for example, such data would be quite limited.
- 4.21 For illustrative purposes in this case study, a range of possible trend outcomes is captured by speculating that the annual rate of mortality improvement is normally distributed with a mean and standard deviation of 0.50% improvement per year, which is broadly consistent with mortality improvements in the general population over the past decade. Further the years of mortality improvement has been limited to 40 years, and also the maximum and minimum improvement assumptions to 3% per year. Using this, a range of scenarios of future mortality assumptions can be derived for revaluing the liabilities. As with the level uncertainty approach, this provides a distribution of possible liability figures, in which only the future trend is varied. All other assumptions are at the best estimate level.
- 4.22 The capital needed can be based on a p% confidence interval from a Student-t distribution with n-1 degrees of freedom, if one is performing the calculation of capital based on revaluing the liability under n historically observed scenarios. Alternatively, if one is using a model to hypothesize future mortality improvement, then the capital can be established by revaluing the liability under a mortality improvement assumption that arises at various percentiles, and choosing the average of the largest 1% of liabilities, less the best estimate. It is important to recognize the subjective nature of either approach.
- 4.23 The table below illustrates the scenarios that were selected for testing. A particular scenario is assumed to apply to all products simultaneously, regardless of the effect of the assumption on the liability. For example, when we test a scenario that features a high rate of future mortality improvement, the effect is generally to produce lower liabilities for the insurance products, and higher liabilities for the annuity products. While one would normally expect an insurance portfolio to benefit from mortality improvements, this relationship can be reversed under certain reinsurance arrangements. This is illustrated further in the section on reinsurance.

	Annual Rate
Percentile	of Mortality
	Improvement
0.5%	1.77%
1.0%	1.66%
5.0%	1.32%
10.0%	1.14%
20.0%	0.92%
30.0%	0.76%
40.0%	0.63%
50.0%	0.50%
60.0%	0.37%
70.0%	0.24%
80.0%	0.08%
84.0%	0.00%
90.0%	-0.14%
95.0%	-0.32%
99.0%	-0.66%
99.5%	-0.76%

- 4.24 At the total company level, the risk exposure to trend uncertainty can be dampened or magnified, depending on the product mix of the company. An internal model can recognize these interactive effects, but this is difficult to achieve in a standardized approach, which might, for example, require that capital be determined separately for each product and the results simply added up. This type of approach might be overly conservative as it assumes that different mortality scenarios occur for different product types.
- 4.25 Note that from the above table, the overall average mortality improvement is 0.50% per year, for 40 years, regardless of the product type. This figure results from the relatively simplistic model that future mortality improvements are selected from a normal distribution, modified only for maximums and minimums. The 0.50% best estimate improvement itself is roughly consistent with observed mortality improvements, in aggregate, in some countries. As mortality has been generally improving over the past century, we do not have many observations in which negative trend, or deterioration, has occurred. Our model implicitly assumes that the observed levels of mortality improvement will continue into the future, which may not be true. A higher standard deviation has been selected to adjust for this so that at higher percentiles, we may get some deterioration that has not necessarily been observed in the past. Capital would then be established at this adverse assumption. For example, at the 99.5th percentile, we are effectively establishing capital on the assumption that mortality will deteriorate by 0.76% per year. This has the effect of increasing insurance liabilities, but decreasing annuity liabilities. If the company had a larger proportion of annuities than insurance, then it may be that the capital is effectively established on the assumption of mortality improvement of 1.77% per year, as opposed to a worsening. A company using an internal model approach should be careful to apply some judgement on the resulting scenarios, to ensure that the assumed mortality improvement / deterioration is not unreasonable.

Percentile:	ALC1001	ALC1002	ALC1003	ALC1004	ALC1005	ALC1007	TOTAL
5.0	123.4	44.9	715.2	(249.4)	(25.2)	257.3	867.2
25.0	142.8	52.5	779.2	(235.6)	(23.1)	254.1	972.9
45.0	154.0	56.5	816.5	(227.7)	(21.8)	252.3	1,030.9
50.0	156.6	57.4	826.1	(225.9)	(21.6)	251.9	1,046.0
55.0	159.3	58.3	834.9	(224.2)	(21.3)	251.4	1,058.9
75.0	170.3	62.2	870.5	(216.5)	(20.0)	249.6	1,116.9
95.0	189.1	68.7	928.9	(202.7)	(17.9)	246.4	1,212.9
97.5	194.7	70.6	947.4	(198.1)	(17.2)	245.1	1,241.4
99.0	201.2	72.7	966.3	(193.0)	(16.5)	243.8	1,274.1
99.5	204.7	74.2	982.2	(189.9)	(16.0)	242.9	1,296.1
99.9	214.0	76.8	1,014.5	(182.2)	(15.0)	241.4	1,339.0
	-	-	-	-	-	-	-
μ	156.5	57.2	824.1	(226.0)	(21.5)	251.8	1,043.6
σ/μ	12.7%	12.5%	7.9%	-6.3%	-10.4%	1.3%	10.0%
ratio: 99.9 / mean	136.8%	134.2%	123.1%	80.6%	69.8%	95.9%	128.3%
CTE99 - CTE0	50.1	17.4	163.6	37.6	5.8	8.7	262.5

4.26 The liabilities that result from this work is shown in the following table:

4.27 What is worth noting in this table is the total capital for this risk for the company is 262.5 million, when modelled in the aggregate assuming that the risk is 100% correlated by product, whereas the simple sum of capital requirements for each product (not shown in table) is \$283.2 million. The annuity product, ALC 1007, has the effect of lowering capital requirements by approximately \$20 million in aggregate, because it reacts favorably to adverse trend assumptions. This can be seen also by looking at the results by percentile. The insurance products (ALC 1001 to ALC 1005) all increase in liabilities at higher percentiles (i.e., at increasingly adverse mortality worsening), whereas the annuity liabilities decrease at higher percentiles. In the section on reinsurance, it will be shown that this effect is in fact amplified in a particular reinsurance situation. When modelling a mixed book of annuities and insurance products it may be wise to consider "non-parallel" shifts (i.e., using asset/liability – ALM – terminology) in mortality (e.g. by age or gender) to recognize the risk that mortality trend may not be perfectly hedged between the annuity and insurance books of business

A.4.2.2 Considerations for Standardized Approaches

- 4.28 There are several possible ways to develop standardized capital models for trend. One example of an "assumption-based" method is to establish a total solvency provision based on a conservative estimate of trend. The difference between the liability established using this conservative estimate, and the liability established using the true best estimate, could be considered the capital for trend uncertainty. For example, the solvency provision for an insurance portfolio might be based on an assumption of no future trend improvement, compared to a best estimate trend assumption of 0.50% improvement per year. Annuity lines would require a solvency provision based on future trends greater than the best estimate.
- 4.29 A simplified approach to provide for trend uncertainty could be to apply a factor multiplied by the present value amount of the liabilities (see following formula). The factor might be expressed as the lesser of α and β times the product duration *n*. Some sample values of α and β are also given in the table below.

С.,	$= \min\{$	α.	Bn}	(lial	bilitv)
~ trend		,	proj	(/

	α	β
Pure endowment	7%	0.35%
Endowment	3%	0.15%
Term	30%	1.50%

The uncertainty trend for a whole life annuity can be based on 4% of the liabilities (x>55). These calculations of trend uncertainty are based on a 99.5% confidence level.

A.4.3 Volatility

A.4.3.1 Internal Model

- 4.30 Volatility risk, or process risk, is the risk that cashflows will not occur as expected due to statistical fluctuations around the expected assumptions. In quantifying this risk, we assume that we have indeed selected the correct best estimate mortality assumptions and future trend assumptions, and that we are only concerned with volatility given those assumptions.
- 4.31 Another important consideration is the time horizon, as described earlier. With the systematic risks, we wanted to provide for adverse liability cash flows for the entire term of the liability, because we cannot perform management or regulatory action to eliminate this risk. With diversifiable risks, however, such as volatility, we only project out for a 2 year time horizon, on the rationale that this risk can be managed. Our case study is therefore based on this 2 year time horizon with respect to volatility risk. As an illustration, we also show what the volatility capital would look like if we considered the time horizon to the full term of the liability. In aggregate, as one might expect, the resulting capital is larger when considering the larger time horizon, but the relationship between the 2 year and full term time horizons are not clear, and in some specific product cases, the 2 year horizon actually produces almost the same capital requirements as with the full term. This is because over the full term of the liability, time diversification is also occurring. Adverse mortality in the earlier years is ultimately followed by more favorable mortality in the later years, and partially offsets the adverse effect of the adverse mortality in the early years.
- 4.32 This case study has used a simulation approach, although analytic approaches are feasible to quantify volatility risk. Under the simulation approach, a Monte Carlo simulation of the portfolio was performed, with the intention of measuring either 2 years worth of claims or the present value of all liability cash flows to the full term of the liability (depending on the definition of volatility risk that we are exploring). The simulation is binomial, meaning that each person in the portfolio is simulated to live or die, based on an expected mortality equal to the best estimate assumption. The capital required is the difference between the claims (or liability) at TVaR_{99%} and the best estimate claims (or liability) over that same period.

A. Volatility Based on 2 Years Claims

4.33 The table below illustrates the results for the various products assuming that the volatility of claims is measured over a 2 year horizon. The effect of aggregating these capital requirements under two extreme assumptions is shown: the volatility risk is 100% correlated across each products; and the volatility risk is completely independent. It can be argued that the volatility risk is more likely to be uncorrelated, or only weakly correlated at extreme confidence levels, but for illustration purposes, both extremes are shown.

	ALC1001	ALC1002	ALC1003	ALC1004	ALC1005	ALC1007	TOTAL	TOTAL
							correlated	independent
Percentile:								
5.0	10.5	4.9	60.1	15.9	3.5	44.6	139.5	144.6
25.0	11.2	5.5	62.4	17.3	3.9	44.7	144.8	147.8
45.0	11.6	5.9	63.8	18.3	4.2	44.7	148.7	149.9
50.0	11.8	6.0	64.2	18.6	4.3	44.7	149.6	150.4
55.0	11.9	6.1	64.6	18.9	4.4	44.7	150.6	151.0
75.0	12.5	6.7	66.2	20.4	4.8	44.8	155.5	153.4
95.0	13.7	7.9	69.7	25.1	5.9	44.9	166.4	159.1
97.5	14.1	8.3	71.0	27.8	6.5	44.9	170.7	161.7
99.0	14.7	9.0	72.5	32.1	7.2	44.9	176.7	165.5
99.5	15.1	9.3	73.6	37.0	7.9	45.0	180.7	170.0
99.9	16.1	10.1	75.6	54.1	9.9	45.0	190.3	182.7
	-	-	-	-	-	-	-	-
μ	11.9	6.2	64.5	19.4	4.4	44.7	150.8	151.0
σ/μ	8.3%	14.9%	4.6%	19.1%	18.3%	0.2%	5.6%	3.3%
ratio: 99.9 / mean	135.5%	163.6%	117.2%	279.3%	222.3%	100.7%	126.2%	121.0%
CTE99 - CTE0	3.4	3.3	9.5	21.5	3.9	0.2	31.7	22.7

Claims Over 2 Year Horizon – Volatility Risk

- 4.34 In aggregate, the capital is between 22.7 million and 31.7 million, depending on whether it is assumed that the volatility risk is correlated or not.
- 4.35 It is also worth noting that the capital as a percentage of expected claims is much higher for smaller or more skewed product distributions. For example, the largest capital requirements of \$21.5 million (or almost 2 years worth of annual claims in this case), arises with product ALC 1004, which as the reader will recall, has only 7400 lives in the portfolio, and a wide range of sum assured in the portfolio. By contrast, product ALC 1003 has 95,000 lives and a more stable sum assured distribution, and the resulting capital requirements in this case are only 9.5 million, or 4 months of claims.
- 4.36 Related to this is the observation that for volatile products such as ALC 1004, the amount of claims increases in extreme measures at the tail of the distribution, relative to the other products. For example, the difference between claims at the 99.5th percentile versus the 99.9th percentile is an increase from \$37 million to \$54 million, which is a 50% increase. This type of jump is not seen in the other, more stable products.
- 4.37 Finally, under this approach, we attribute virtually no capital to the annuity lines (ALC 1007), as the impact of volatile mortality over a 2 year period on the monthly payments to annuitants (approximately \$44 million over 2 years) is negligible.

B. Volatility Based on Present Value of Liability Cash Flows

4.38 The table below shows the capital that would result if we defined the capital based on the liability, or present value of future cash flows at the risk free rate. Generally, we see that the more volatile the product (for example, higher standard deviation of annual claims), the closer the capital requirements become regardless of the time horizon. ALC 1004 in particular, which we identified previously as the most volatile product, has virtually the same capital requirements regardless of the choice of definition. Large stable segments such as ALC 1003 would produce almost double the capital requirements, should the definition of capital be based on all liability cash flows. Also, under the full liability term definition, we do get capital requirements for the annuity product (ALC 1007), as volatility does affect the ultimate results in the long run. This is

perhaps appropriate for annuity type products, as it is arguable whether volatility risk for these products can be managed as easily as the insurance volatility risks.

Lubinites over 1 un Term Horizon - Impact of volutility Hisk					
Product Code	Capital based on 2 years claims	Capital based on all liability cash flows			
ALC 1001	3.4	6.2			
ALC 1002	3.3	5.4			
ALC 1003	9.5	16.8			
ALC 1004	21.5	23.9			
ALC 1005	3.9	12.9			
ALC 1007	0.2	7.6			

Liabilities Over Full Term Horizon – Impact of Volatility Risk

A.4.3.2 Considerations for Standardized Approaches

4.39 Traditional volatility risk is often calculated using a simulation model. A good alternative is an analytical approach, such as the Normal Power approximation which uses the first 3 moments of the Compound Poisson distribution. Under this approach, the capital at a 99.5% confidence level in the Normal Power approach is:

$C_{vol} = \sigma(2.58 + 0.94\gamma)$

In other words, the capital would be a multiple of the standard deviation of annual death claims, with an adjustment for the skewness of the portfolio.

4.40 The table below compares these simplified standardized approach to the internal model results.

	Internal Model	Normal Power
ALC1001	3.4	3.2
ALC1002	3.3	3.2
ALC1003	9.5	9.1
ALC1004	21.5	30.9
ALC1005	3.9	3.7

As the table shows, the Normal Power method produces reasonably accurate approximations to the internal model, except for product ALC 1004, which as the reader will recall is a highly skewed portfolio with a large standard deviation.

A.4.4 Catastrophe Risk

4.41 This risk can be described as the risk that a catastrophe occurs that causes a one-time spike in mortality experience, with a corresponding impact on claims and/or liabilities. As there have not been many observed catastrophes that affect insured life populations in the past century or so, it is difficult, and perhaps spuriously accurate, to formulate a model that quantifies this. Any such model would be highly subjective, and we expect that the industry may start focussing on this item. Such a model would most likely be a frequency / severity model that assumes probabilities of various types of catastrophes that vary be severity in their impact. For example, there might be a very small probability of an epidemic such as the Spanish Flu of 1918, that caused a doubling of

infectious disease mortality in certain age groups, and a larger probability of a less severe epidemic or other incident.

- 4.42 We have not attempted to model this in this case study. Rather, we have taken a deterministic approach. Under this approach, we require that the company have enough capital to absorb a doubling of mortality in a 1-year period. (Our model specifically assumes that although the event that causes the doubling of mortality occurs in the first year, the actual mortality impact is spread over a 2-year period as 50% increases in the mortality rate in each of those 2 years).
- 4.43 Because there is interaction between the catastrophe and the volatility risk described above, we want to consider the impact of both of these risks occuring simultaneously. To that end, we quantified the volatility risk using the Monte Carlo simulation described in the volatility section, and assuming that the expected mortality was double our best estimate mortality in the first year. We then measure the claims over a 2 year period (or the liability, depending on our definition of capital), at the CTE (99) level as well as the best estimate level. The total solvency requirement for volatility and capital combined is the CTE (99) figure at this higher level of mortality, less the CTE (0) figure using our best estimate of mortality (i.e., before the catastrophe). We attribute the volatility component of this capital as based on our best estimate of mortality, and the catastrophic component is the incremental difference in CTE (99) at the higher mortality relative to the CTE (99) at the best estimate mortality.

A. Catastrophe Based on 2 Years Claims

4.44 When we define the capital to be based on claims over a 2 year period only, this approach effectively amounts to a requirement equal to 1 years worth of claims, less an adjustment for the interaction between normal volatility risk and catastrophe risk. As the table below illustrates, for large and stable portfolios, the catastrophe risk is significant relative to the volatility risk, whereas for small and skewed portfolios, the catastrophe risk is almost indistinguishable from normal volatility.

Capital	Risk Measure	Basis	ALC 1001	ALC 1002	ALC 1003	ALC 1004	ALC 1005	ALC 1007
Volatility	CTE 99 (Vol)	100% Expected	15.3	9.5	74.0	40.8	8.3	45.0
	CTE 0 (Vol)	100% Expected	11.9	6.2	64.5	19.4	4.4	44.7
	Capital for volatility		3.4	3.3	9.5	21.5	3.9	0.2
			-	-	-	-	-	-
Catastrophe	CTE 99 (Cat+Vol)	200% Expected	21.5	13.3	109.0	44.3	12.8	44.9
	CTE99(Vol)	100% Expected	15.3	9.5	74.0	40.8	8.3	45.0
	Capital for catastrophe		6.2	3.8	35.1	3.5	4.4	(0.1)
	TOTAL		9.6	7.2	44.6	24.9	8.3	0.1

Claims Over 2-Year Horizon – Catastrophe and Volatility Risk

B. Catastrophe Risk Based on Present Value of Liability Cash Flows

4.45 For information purposes, we show below the capital that would result under a doubling of mortality in the first year, as above, but where the capital is based on the present value of all future liability cash flows.

Product Code	Capital based o	n 2 year ca	Capital based on all liability cash flows		
ALC 1001		Term to 100 insurance	56,971	3.6 Billion	
ALC 1002		Non-par Whole Life	5,000	0.9 Billion	
ALC 1003		Term to 100 insurance	94,560	9.0 Billion	
ALC 1004		1 year renewable Term	7,463	1.4 Billion	
ALC 1005		5 year renewable term	3,450	0.5 Billion	
ALC 1007		Payout Annuities	250	1.5 million / month	

Liabilities Over Full Term Horizon – Impact of Catastrophe Risk

	Capital based	on 2 years claims	Capital based on all liability cash flows		
Product Code	Volatility	Catastrophe	Volatility	Catastrophe	
ALC 1001	3.4	6.2	6.2	5.2	
ALC 1002	3.3	3.8	5.4	2.5	
ALC 1003	9.5	35.1	16.8	25.4	
ALC 1004	21.5	3.5	23.9	10.6	
ALC 1005	3.9	4.4	12.9	4.5	
ALC 1007	0.2	(0.1)	7.6	(2.6)	

4.46 Under this definition, the relative magnitudes of catastrophe versus volatility have changed, with catastrophe not being as significant a component. Over time, the effects of the catastrophe become indistinguishable relative to volatility. In aggregate, the capital requirements are larger under this definition.

A.5 Solvency Provisions for Lapse risk

A.5.1 Lapse Level Risk (Misestimation of the Mean)

A.5.1.1 Internal Models

- 5.1 The lapse risk can be analyzed in a similar fashion to the mortality risk, although there are several other factors that need to be considered. In our case study, we have not dealt with these more complicated factors. It is a fair statement that significantly more work needs to be done by the actuarial profession in general to truly understand the lapse risk. Some of these factors include:
 - 1. A need to differentiate between those portfolios whose lapse rates are likely to show dependencies with other economic assumptions, from those portfolios that are not sensitive to economic conditions. Where the lapse rate does interact with other assumptions, the model should ideally reflect these dependencies. Such a model would be highly subjective, as there is little historical data to base this on. Even the form of the model would, at first, be speculative.
 - 2. The lapse assumption is highly dependent on the product itself, including the manner in which the product was sold, the competitive environment at the time of sale, the purpose of the product (eg, tax planning, insurance needs, etc). Even if the lapse assumption is based on large volumes of data, it is more difficult to apply those same lapse assumptions to portfolios other than the portfolio from which the lapse rates were derived. This increases the uncertainty around the lapse assumption significantly.
 - 3. The impact to the company of higher or lower than expected lapses can be positive or negative for different policy durations and product types. These relationships can change over time, not only with the natural aging of the policy, but also in the events that the other actuarial assumptions change in the future. This is further complicated by the potential impact of policyholder behavior.
 - 4. In addition to these, we also have the normal statistical error associated with estimating average rates from historical, volatile assumptions.
- 5.2 Our case study considers the last of these issues, the possibility that the best estimate lapse assumption, which is based on historical data for the company, is inaccurate due to statistical error.
- 5.3 To determine the statistical error in the lapse rates, we first analyze the lapse study that exists for the various product lines. These lapse studies give us, for each issue year within a product group, the actual lapse rates experienced by that cohort for several calendar years. From this, we determine our best estimate lapses as well as the standard deviations of those lapse rates. We make the assumption that the lapses are normally distributed, and we solve for lapse rates at alternate percentiles for each duration. For example, the best estimate lapses rate might be 10% in the first policy duration and grade to an ultimate lapse rate of 1% in 12 years. The corresponding lapse assumption at the 90th percentile might begin at 12.4% and grade to an ultimate of 1.2%. At the 10th percentile, the lapse assumption starts at 8.7% and grades to an ultimate of 0.8%. This effectively results in parallel shifts in lapse rate curves, although the degree of the shift varies by duration based on the standard deviations of the lapse rates.
- 5.4 Liabilities are recalculated using these various lapse assumptions, and from these deterministic scenarios, a distribution of liability amounts is fitted using statistical techniques. We do this so that we can fill out the distribution and combine with other risks if desired.
5.5 Of course, it is possible that the statistical error in the lapse rates is not always one-sided. In other words, it may be that the lapse rate for duration 1 might be overstated while the lapse rate for duration 7 is understated. By shocking the lapse rates in parallel by duration, we are assuming 100% correlation between the durations, which we *assume* will produce more conservative results than considering the lapse rates by duration as independent. We validate this assumption in our case study by performing some additional tests in which the lapse shocks do vary by duration. This may not always be appropriate, but in our case study, our approach turns out to be more conservative in the majority of scenarios tested.

							TOTAL	TOTAL
	Lapse							
Percentile	rates	ALC 1001	ALC 1002	ALC 1003	ALC 1004	ALC 1005	Correlated	Independent
5.0	Higher	138.1	49.2	742.5	(178.4)	(17.1)	965.3	951.0
25.0	Higher	148.7	52.3	787.6	(187.9)	(17.7)	1,006.1	999.7
45.0	Higher	154.6	54.1	812.6	(191.3)	(18.1)	1,028.4	1,026.2
50.0	Expected	155.9	54.5	818.1	(196.8)	(18.6)	1,033.7	1,032.2
55.0	Lower	157.2	54.9	824.0	(201.1)	(19.0)	1,039.2	1,038.6
75.0	Lower	163.2	56.5	847.0	(216.2)	(20.5)	1,061.8	1,064.6
95.0	Lower	173.9	59.1	884.7	(224.2)	(21.3)	1,097.5	1,105.6
97.5	Lower	177.4	59.9	895.9	(226.0)	(21.5)	1,107.0	1,118.3
99.0	Lower	181.3	60.7	910.3	(228.1)	(21.7)	1,119.7	1,133.8
99.5	Lower	183.8	61.3	917.0	(236.1)	(22.6)	1,126.7	1,143.1
99.9	Lower	188.9	62.4	933.4	(250.4)	(24.2)	1,147.4	1,160.7
S		10.9	3.0	43.3	14.9	1.6	40.0	47.2
s/m		7.0%	5.5%	5.3%	-6.6%	-7.2%	3.9%	4.6%
ratio: 99.9 / mean		121%	115%	114%	79%	79%	111.1%	112.6%
CTE(99) - CTE(0))	28.9	7.1	103.3	39.9	3.9	97.2	115.2

Liabilities Under Lapse Misestimation Risk

- 5.6 We observe several things from this table:
 - The liabilities for products ALC 1001 to ALC 1003 all increase with decreasing lapse rates, whereas the liabilities for products ALC 1004 and ALC 1005 do the opposite. These latter products are highly profitable renewable term policies in which the premiums significantly exceed the claims and expenses at most or all durations. Lower lapse rates than expected for these products help the Company because it results in unexpected future profits. By contrast, the first three products have level premiums which are ultimately insufficient in and of themselves to pay for claims. The Company in these cases is better off with higher lapses in those later durations.
 - Three of the products are exposed to lower lapse rates, and two of the products to higher lapse rates. When combining the capital from these different products, we must make an assumption about the degree to which they are correlated.
 - On the one extreme, we could take the view that the lapse risks for each product is completely independent. That is, we may have underestimated the lapse rates for one product but overstated them for another product. If we combine the risks using this assumption, we get total capital requirements of \$115 million, which can be approximated by the square root of the sum of the squares of the individual capital requirements.

- We could also take the view that there is a systematic bias inherent in the lapse studies themselves, and that the lapse assumptions are therefore 100% correlated. For example, if we assume that all of the lapse studies for each product is done in the same corporate area using the same methodology, there may be a bias that causes the resulting lapse assumptions to be higher or lower than the true best estimate, for all products. If we aggregated the liabilities at the company level using this assumption, we would get aggregate capital requirements of \$97 million. This is less than the capital that results from an assumption of independence between the products, because of synergies between the products. Higher liabilities arising from some product lines are offset partially by lower liabilities from other product lines in the same scenario.
- Finally, on the other extreme, we could assume 100% correlation between the liabilities themselves. This would mean that we pick adverse scenarios that vary by product. For products ALC 1001 to 1003, we would be setting capital assuming very low lapse rates, whereas with ALC 1004 and 1005, we would be assuming high lapse rates.
- 5.7 A final consideration is that we could account for the risks that we have not modelled either by selecting a higher confidence level to set capital, or perhaps to set the final capital levels using multiples of capital derived by considering the statistical error risk only. We have not done this in our case study, but is the type of approximation we would consider in a real situation.

A.5.1.2 Considerations for Standardized Approaches

- 5.8 There are two primary effects of unanticipated lapse rates. The first involves the payment of surrender or termination values. The relationship of the amount of a surrender payment to the value of the liability being held in respect of a particular policy is of great importance. When a policy lapses, the company pays the surrender value and 'receives' the actuarial reserve that is released by the policy's termination. If surrender values are lower than policy reserves, the company is at risk from lapse rates that are lower than expected, particularly if high lapse rates were anticipated in the pricing of a product. The case that surrender values exceed policy reserves results in higher lapse rates being unfavourable to the insurer. In some jurisdictions these risks are mitigated by regulations. A requirement that a company holds policy liabilities at least as large as surrender values provides partial protection against overly high lapse rates while minimum required surrender values reduce the likelihood that insurers will price their products using an assumption of high lapse rates. It is important to recognize that the relationship between the surrender value and the actuarial reserve is not fixed; it will generally vary with the duration of a particular policy.
- 5.9 The second primary effect of unanticipated lapse rates is that the insurer may not realise the expected recovery from future premiums of initial policy acquisition expenses. These acquisition expenses may be recognized implicitly in financial statements through the use of modified net level premium valuation methods. These implicit methods generally do not include any provision for unfavourable variations in lapse rates. Recovery of acquisition expenses may also be recognized explicitly through a reduction in policy liabilities or through introduction of a receivable asset. In this latter case, the adjustment to financial values is made subject to a form of recoverability test. Under the second primary effect, the risk to insurers is generated by lapse rates that are greater than expected.
- 5.10 Unanticipated lapses can have other effects on the financial condition of an insurance company. For example, anti-selective lapse by healthier lives may lead to deterioration in a life insurer's mortality experience. This risk may be exacerbated by poor product design, an operational risk. In general, this risk is not treated for capital purposes as a lapse risk.

5.11 In the case that lapses are recognized explicitly in the valuation of actuarial liabilities, an approach to capital requirements in respect of the first type of lapse risk is available. This requires the division of policies into two classes: 1) those for which an increase in lapse rates results in an increase in policy liabilities, and 2) those for which policy liabilities increase when assumed lapses decrease. The capital requirement is of the form of the difference between a special valuation of policy liabilities and the normal valuation. For the special valuation, the lapse assumption is multiplied by a specified factor greater than one for policies in the first class and by a factor less than one for policies in the second class. As an example, in Canada, lapse rates are doubled for policies in the first class and reduced by one-half for those in the second class.

A.5.2 Volatility

- 5.12 Analogous to mortality volatility, this risk provides for uncertainty in cash flows arising due to statistical fluctuation around the best estimate lapse assumptions. This component can also be defined on the basis of either the impact on cash flows over a short term horizon such as 2 years, or as the impact on the liability, or present value of cash flows, over the entire term of the liability. Although process risk generally can be considered diversifiable, it is more difficult for a company to manage its volatility due to lapses as opposed to mortality. For that reason, it may be appropriate to consider a longer time horizon.
- 5.13 In our case study, we define the capital for lapse volatility risk on the basis of the impact on the total liability, as opposed to a shorter term. If we were to measure on a shorter term horizon, we would establish virtually no capital, as the products in this company have little or no cash values, and the impact of adverse lapses on other cash flows over a short horizon is negligible.
- 5.14 The table below illustrates that even on the basis of the full term of the liability cash flows, the lapse volatility risk is relatively immaterial compared to the other risks:

	ALC1001	ALC1002	ALC1003	ALC1004	ALC1005
Percentile:					
5.0	154.7	53.0	814.6	(238.6)	(23.1)
25.0	156.0	54.1	818.4	(233.6)	(22.3)
45.0	156.7	54.7	820.8	(231.0)	(21.9)
50.0	156.9	54.9	821.3	(230.4)	(21.8)
55.0	157.1	55.0	821.8	(229.8)	(21.7)
75.0	157.8	55.6	824.0	(227.1)	(21.3)
95.0	159.1	56.8	828.1	(222.4)	(20.5)
97.5	159.5	57.2	829.5	(220.6)	(20.3)
99.0	160.0	57.6	830.7	(219.1)	(20.0)
99.5	160.2	57.9	831.7	(218.1)	(19.8)
99.9	160.9	58.6	834.1	(215.6)	(19.4)

Liabilities Over Full Term Horizon – Lapse Volatility Risk

A.6 Solvency Provisions for Expense Risk

6.1 A detailed understanding of the company's expense structure and expense drivers is a key element when determining the expense risk. In the calculation of the capital for expense risk we distinguish between acquisition and maintenance expense risk. Possible methodologies used to estimate the expense risk economic capital can range from simple to complex. However more

importantly whatever methodology is used the process focuses on understanding the underlying structure of company expenses

- 6.2 A few of the key risks facing an insurer include:
 - Misclassification of expenses between acquisition and maintenance, with inappropriate liabilities being established for in-force policies
 - Future changes in the product offerings of the company, leading to different cost structures in the future than current
 - Unstable volumes of new business and in-force
 - Inflation is different than expected
- 6.3 One simple method to calculate solvency capital for expense risk would be to calculate as a multiple of Fixed Acquisition Expenses plus Maintenance expenses. For example, one could require the company to have sufficient capital on hand to pay for one year of additional expenses, which might represent the length of time required for a regulator to settle a problematic situation.
- 6.4 Alternately, one could require that maintenance expenses be explicitly provided for by inflating the best estimate unit costs by a factor that varies based on the stability and accuracy of the company's expense studies. In this way, the total solvency provision would provide for the present value of best estimate maintenance expenses to mature the in-force policies, plus an additional provision that might range from , say 2.5% to 10% of this amount. Under this model, acquisition expenses would not be explicitly provided for as Pillar 1 capital, but could be covered under Pillar 2, in which a periodic review of the company's expense study would be performed.
- 6.5 Additionally, inflation could be covered by putting an explicit margin on the inflation assumption and revaluing the liabilities.

A.7 Solvency Provisions for Market Risk

A.7.1 Mismatch Risk (ALM Risk)

A.7.1.1 Internal Models

- 7.1 The mismatch risk considers the risk that the best estimate cash flows arising from the assets supporting the liabilities, do not match the best estimate liability cash flows, which results in required reinvestment, disinvestments or borrowing required by the insurer to satisfy liquidity needs. Because the future reinvestment environment is uncertain, this can result in additional gains or losses to the insurer based on the market values of the assets at those future points in time. In other words, this risk is ultimately that the market price of the assets changes unfavorably at a time when those assets need to be liquidated.
- 7.2 To quantify this risk using internal models, we perform the following calculation, under two sets of stochastic reinvestment scenarios:
 - First, we project the best estimate asset and liability cash flows arising from the portfolio under the stochastic reinvestment scenarios being tested. This results in net cash flows being available for reinvestment or disinvestment in each future period. These cash flows are dealt with according to an assumed reinvestment strategy, that is based on the insurers actual strategy. Future reinvestment rates are modelled based a double mean reverting process., where future yield curves are modelled based on a random walk, but where the mean rate is based on a probability distribution.

- In each scenario, the insurer will be left with a certain amount of surplus or deficit at the end
 of the projection. We then solve for the amount of additional assets needed at the beginning
 of the projection, such that we end the projection with a zero balance.
- The assets required under the base scenario are also determined. The base scenario assumes that future reinvestment rates are the best estimate, or average, of the rates projected under each of the stochastic scenarios.
- 7.3 Two sets of stochastic scenarios of future reinvestment rates are tested.
 - First, we generate future reinvestment rates from the current yield curve as of the current valuation date. A total solvency provision is determined as the difference between the assets required at TVaR_{99%}. and the best estimate assets;
 - The second tests are to generate future reinvestment rates from a shocked yield curve at the current valuation date. The shocked yield curve is derived from the current yield curve by applying the maximum shock that is likely to occur to the yield curve in a 1-year period with 99.5% confidence. A solvency provision is then determined as the difference between the assets required at a lower confidence level such as TvaR_{75%}. and the best estimate assets.
- 7.4 The final provision is based on the greater of the two calculations. The intention of this calculation is to ensure that the Company has at least enough money to establish liabilities at a lower confidence level, such as CTE (75), having survived an adverse yield shift as might occur in a 1-year period, or to provide for longer term mismatch.
- 7.5 In our case study, the first test produces a larger figure. The table below summarizes the capital requirements that we derive. As a matter of interest, the scenarios that produce the largest liabilities are the low interest scenarios.

	Insurance	Annuity
Percentile		
5.00%	294.6	221.0
25.00%	406.0	226.3
45.00%	472.0	229.3
50.00%	489.2	230.4
55.00%	511.3	231.1
75.00%	577.0	236.5
95.00%	807.9	243.6
97.50%	836.8	244.9
99.00%	841.9	246.1
99.50%	842.7	246.6
99.90%	843.3	247.0
CTE		
0.00%	507.8	231.4
60.00%	657.1	238.9
80.00%	757.1	241.7
95.00%	838.9	245.6
99.00%	843.5	247.1
Total Capital /	Margins:	
CTE 95	331.1	14.2
CTE 99	335.7	15.7

A.7.1.2 Considerations for Standardized Approaches

- 7.6 A simpler standardized approach is one that would not require the company to perform assetliability modelling. We would instead require the company to measure various statistics about the degree of mismatch, and develop factors based on that. In developing these factors and the corresponding exposure measures, it is important to be aware of the limitations of each simplified approach, and perhaps introduce additional rules that deal with those limitations.
- 7.7 For example, one possible standard factor approach might consist of applying factors to the assets supporting a block of business, where the factors vary based on the difference in Macaulay duration of the assets and liabilities. It is well understood, however, that duration measures do not reflect the degree of cash-flow mismatch very well. It is certainly possible for a portfolio to have grossly mismatched asset and liability cash-flows, but with virtually equivalent asset and liability durations. If such a duration-based capital requirement were implemented, it might also be appropriate to require a minimum amount of capital to deal with this shortcoming. Adjustments might also have to be developed for unusual situations with respect to the exposure base.
- 7.8 A simpler approach is to assume that all portfolios of like characteristics are duration mismatched to the same degree. A set of factors could then be developed that vary only with the characteristics of the liability portfolio, such as the length of guarantee periods remaining, the ability of policyholders to withdraw funds, etc.

A.7.2 Credit Risk

- 7.9 The case study also includes capital provisions for asset default risk. These provisions have been established using capital requirements from Basel II, which is a new accord being developed to provide more flexibility and risk sensitivity than exists in the original 1988 Basel Accord. The 1988 Basel Accord established credit risk as eight percent of risk weighted assets, where the risk weights are prescribed by type of asset. For example, all corporate bonds are given a 100% risk-weight in the 1988 Accord (regardless of credit rating), and OECD government bonds have a weighting of zero. Under Basel II, a bank will have a choice of three approaches for capital provisions:
 - Standardized Approach: This is very similar to the original 1988 Basel Accord, except that the risk-weightings applied to each asset are based on a credit rating from an external rating agency.
 - Foundation Internal Rating Based (IRB) Approach: Under this approach, a bank would develop its own risk weightings for each counterparty exposure, based on its own internal model. The risk weightings are achieved through a specified formula that takes into account the probability of default (from banks internal model), time to maturity and loss given default. The time to maturity is prescribed to 2.5 years, and the loss given default is 50% for all assets.
 - Advanced Internal Rating Based (IRB) Approach: This approach is similar to the Foundation approach, except that the actual time to maturity of the assets is reflected, and the loss given default is also generated from the bank's internal model.
- 7.10 The case study is specifically based on application of the Basel II "Advanced IRB" Approach. Our internal model is used to generate probabilities of default, time to maturity and loss given default, for each of the assets in the portfolio. Application of the Basel II formulae results in capital provisions for these assets. Although designed as a banking application, we see no reason to recommend a different approach for insurance company solvency assessments in general, and for this case study in particular.

7.11 In the table below, the capital provisions using the Basel II Advanced approach are summarized. For illustrative purposes, the impact of using alternate regulatory models (i.e., the Basel II "Standardized" and "Foundation" approaches, as well as the original 1988 Accord) and several internal models is also shown.

Assets		Par Value	Book Value	Required	
					As % Par
		(Exposure at Default)		Capital	Value
Cash and equivale	ents	129,767	129,767	-	0.0%
Bonds of OECD co	ountries	654,903	661,189	-	0.0%
Subtotal		784,670	790,956	-	0.0%
Corporate Bonds	AAA	127,387	135,924	1,843	1.4%
	AA	325,341	332,544	5,815	1.8%
	А	204,578	205,706	5,730	2.8%
	BBB	105,003	111,635	7,419	7.1%
Subtotal		762,309	785,809	20,807	2.7%
Total		1,546,979	1,576,765	20,807	1.3%

Basel II (Advanced)

7.12 For illustrative purposes, we also show the impact of using alternate regulatory models (i.e., the Basel II "Standardized" and "Foundation" approaches, as well as the original 1988 Accord) and several internal models. This analysis is done on the corporate bond portfolio only, as the other assets are assumed to have no default risk.

Capital for Asset Default Under Alternate Models							
Assets	Par Value	Required					
	(Exposure at Default)	Capital	As % Par Value				
Basel II (Advanced)	762,309	20,807	2.7%				
Basel II (Standard)	762,309	23,827	3.1%				
Basel II (Foundation)	762,309	11,485	1.5%				
Basel 1988 Accord	762,309	60,985	8.0%				
Internal Models							
Model (1)	762,309	12,197	1.6%				
Model (2)	762,309	19,343	2.5%				
Model (3)	762,309	26,229	3.4%				

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7.13 The Basel II (Advanced) model generates capital provisions of 2.7% of exposure at default (par value), based on the actual times to maturity of the assets in our portfolio, and based on our internal model estimates of probabilities of default. It is interesting to note that the Basel II (Standard) approach gives a slightly higher capitalization because of the use of prescribed risk weighting factors that vary only by credit rating. In the Basel II (Foundation) model, we generate significantly lower capital requirements than both the Standard and Advanced approaches, because we are allowed to reflect our own internal probabilities of default but are required to use an average time to maturity of 2.5 years. While this may be representative of a typical banking

book, most life insurance portfolios are of longer duration, which suggests that the Foundation approach may not be appropriate for life insurance asset portfolios. In the internal model results, we use three independent models. The first of our three internal models also generate capital requirements between 1.6% and 3.5% of exposure at default. The first model (the KMV model) attributes capital based on probabilities of default, loss given default, correlation between assets, and also the diversification of the portfolio. ⁹The second and third models are described in the Institute of Actuaries of Australia paper by Martin Paino and Greg Martin, as being an adjusted Default model (DM) and an adjusted Mark to Market (MTM) model, shown as Model (2) and Model (3) respectively in the table above.

- 7.14 Capital requirements for asset default should only be based on those assets that support the liabilities and required capital of the company. Ideally, we would not establish provisions for assets that support the free surplus, for reasons explained in this Report. Ignoring asset defaults on free surplus assets would result in an iterative process to determine capital requirements. This is because the free surplus and the asset default capital requirements are inter-related. For simplicity, we have ignored this in the case study, and have simply shown asset default capital requirements for all assets in the company, regardless of whether the asset is considered free surplus.
- 7.15 The asset default requirements in the case study are considered "type A", which means that they provide for asset defaults on existing assets only. Because of the long term nature of life insurance, insurers must also be concerned with "type B" asset default risks, that is, asset defaults on future assets purchased by the insurer with future positive cash flows. We have provided for this in the case study by discounting liability cash flows at a risk-free rate. The spread between the risk-free rate and the expected returns of specific assets, however, reflect both asset default and liquidity risks, and so, we may be overly conservative in the case study by assuming that the entire spread represents an asset default provision.

A.8 Effects of Reinsurance on Internal Model

A.8.1 Effects on Insurance Risk

- 8.1 Our case study until now has been based on the assumption that there is no reinsurance in place. Suppose now that the company wanted to reinsure the mortality risk for one of its product segments, ALC 1001. The reader will recall that this product is a term to 100 product with approximately 56,000 lives in it, and approximately \$150 million of liabilities as measured on a best estimate basis at the risk-free rate.
- 8.2 We are interested in the effects of various reinsurance structures on the mortality risk, both as regards the product ALC 1001 on a stand-alone basis, but also as it affects the total provisions for mortality risk.
- 8.3 We consider several different types of reinsurance arrangements. For the purposes of this analysis, we differentiate the reinsurance arrangements into 2 categories:
 - Reinsurance that guarantees the future mortality cost for a portion of the risks, with reinsurance premiums guaranteed at the Company's expected mortality level for a period of time;
 - Reinsurance that guarantees and lowers the future mortality cost for a portion of the risks. Reinsurance premiums in these cases are guaranteed at lower rates than the Company's expected mortality levels.

⁹ Martin G, Paino M., 2003, Capital Reserving for Credit Risk for Insurers (Life and GI) and other Institutions, Institute of Actuaries of Australia

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Reinsurance 1. Gross of reinsurance	Description No reinsurance	Amount of cession	Reinsurance premiums N/A
2. YRT Coinsurance at neutral reinsurance rates	45% of sum assured ceded on YRT basis	45% sum assured on each policy; roughly \$2 billion in aggregate	YRT at 70% of Industry table, with annual adjustments equal to Company's expected trend
3. YRT Excess reinsurance, at neutral rates	Sum assured in excess of \$50,000 ceded on YRT basis	Excess of sum assured over \$50,000; roughly \$2 billion in aggregate	As 2. Above
4. YRT coinsurance, neutral rates	90% of sum assured ceded on YRT basis	90% sum assured on each policy; roughly \$3.2 billion in aggregate	As 2. Above
5. YRT Coinsurance at low rates	45% of sum assured ceded on YRT basis	As 2. Above	YRT at 70% of Industry table, with annual adjustments equal to Company's expected trend
6. YRT Excess at low rates	Sum assured in excess of \$50,000 ceded on YRT basis	As 3. Above	YRT at 70% of Industry table, with annual adjustments equal to Company's expected trend
7. Quota Share	Reinsurer accepts 45% of all cashflows	45% of all cashflows	N/A

Alternate Reinsurance Structures Applicable to Product ALC 1001

- 8.4 The results are shown in the table below. The following comments are noteworthy:
 - 1. The reinsurance is designed to cede away 45% of the risk, approximately (except in one case). As we can see in the table, the level and trend risks are indeed ceded away by roughly that amount, but the specifics depend on the structure of the reinsurance. For example, when we lock in premiums of 70% of the expected table, which is the same as the Company expected mortality cost, then we do indeed cede away approximately 45% of the risk. When we lock in more favorable rates, however, we see that the level and trend risks actually increase relative to the 70% premiums (The liability iteself decreases by \$60 million because of the more favorable rates (not shown), but the capital relative to this figure increases). This is because we've changed our exposure to the risk. With these new terms, reinsurance becomes more expensive relative to the best estimate liabilities in favorable mortality improvement scenarios.

- 2. Obviously, if the goal is to control the volatility risk, then an excess retention structure is better. These structures reduce the volatility and catastrophe risk without materially impacting the level and trend risks. On this issue, though, it is important to note that many capital standardized systems do not differentiate between the types of reinsurance structures. In Canada, for example, the capital for volatility and catastrophe would be the same for all of these reinsurance structures, even though clearly, the form of the structure affects the risk.
- 3. On the 90% coinsurance arrangement, we've ceded away over 90% of the level risk, but only 80% of the trend risk. In addition, the exposure has actually changed direction. The company is now better off if mortality worsens, because the company is only exposed to 10% of the actual mortality losses in current periods, and stands to gain on a reduction of future reinsurance premiums on the 90% that is ceded. A standardized system would only be able to capture such a dynamic if the assumptions themselves were carefully mandated, and not through simple use of factors.

			Reinsurance	Capital for Mortality Risks			isks
	Reinsurance	Ceded:	Premiums	Level	Trend	Volatility	Catastrophe
1	Gross	N/A	N/A	43.1	50.1	3.4	6.2
2	Coinsurance	45%	70% Table	20.9	20.3	1.8	3.4
3	Excess retention	>\$50,000	70% Table	22.3	21.7	0.9	3.5
4	Coinsurance	90%	70% Table	2.2	9.2	0.3	0.6
5	Coinsurance	45%	45% Table	23.3	23.4	1.9	3.5
6	Excess retention	>\$50,000	45% Table	23.6	25.2	0.9	3.6
7	Quota Share	45%	N/A	24.3	27.2	1.9	3.4

Effect of Reinsurance on Mortality Capital Product ALC 1001 Only

A.8.2 Counter-party Risk

- 8.5 Under the various reinsurance arrangements discussed above, the company would be subject to additional credit risk in the form of counter-party risk. This could be quantified by applying factors to the amount exposed to risk of default by the counter-party, i.e., the reinsurer.
- 8.6 One approach that could be taken is to base the probability of default on the credit rating of the reinsurer. For example, if the reinsurer in our case study were rated "A", we could assume probabilities of default consistent with any "A" rated asset as per Basel II. Using the Basel II (Foundation) factors, we would assign an annual probability of default of 0.7%.
- 8.7 The amount of risk exposed would reflect the amount of assets that the Company would lose should the reinsurer default. This would include any outstanding receivables from the reinsurer net of outstanding payables at a minimum, but may also include reserves ceded to the reinsurer which would have to be re-established on the balance sheet of the company. Reserves might be too conservative an estimate of the amount at risk, however, as the Company would potentially have the opportunity to obtain replacement coverage.

A.9 Conclusions

9.1 The case study highlights that one can conceptualize an advanced model for a life insurance company that in turn can be used to develop a standardized approach for those life risks that are well understood and for which there is ample historical data. One must exercise more care in developing a standardized approach for other life risks, to ensure that the impacts of policyholder behavior, complex options in the policies and the complex interactions between risks are reflected in an appropriate manner.

Appendix B Non-Life (P&C) Insurance Case Study

B.1 Introduction

- 1.1 This non-life insurance company case study has been prepared by the WP to illustrate some of the concepts discussed in this report. The main purpose of the case study is to describe calculations that a company might undertake in order to determine total solvency provisions for various risks, and to highlight some of the issues in these calculations.
- 1.2 This non-life insurance company case study has been prepared by the WP to illustrate some of the concepts discussed in this report. The main purpose of the case study is to describe calculations that a company might undertake in order to determine total solvency provisions for various risks, and to highlight some of the issues in these calculations.
- 1.3 This case study begins by using a model of insurer aggregate losses to calculate the assets needed to support the insurer's liabilities. The model produces the distribution of the total loss arising from post calculation date exposures and unpaid claims liabilities arising from past exposures. From this distribution, we set the required assets equal to the Tail Value-at-Risk, evaluated at the 99% level ($TVaR_{99\%}$).
- 1.4 These assets can come from two sources. The first source is from the policyholders, after the provision for the various reserves and expenses (including reinsurance expenses) are removed. The second source is the investors, through either a direct contribution to capital or from retained earnings from prior years of operation.
- 1.5 In this case study, the risk-based capital charge is defined as:

TVaR_{99%} – Expected Net Losses on Current Business – Net Loss Reserve

- 1.6 The reserves are set at the expected value of future payments with no discounting for the time value of money. The size of the reserves to subtract from the assets deserves some discussion. The loss reserve could be set at the expected present value of future payments. If a more conservative estimate is desired, an insurer could remove the discount for the time value money, or even require a more conservative estimate. Ultimately, such a decision is left up to the insurance regulators.
- 1.7 This case study concentrates on underwriting risk and does not consider other sources of risk. A complete risk-based capital formula should also consider asset risk and well as the risk of premium deficiency, i.e. the risk that the market will not allow adequate premiums.
- 1.8 This case study illustrates two ways to calculate the insurance risk portion of the minimum capital requirement for a general insurance company. The first calculation will be a factor-driven formula where the parameters can be specified by either the regulator, or by the insurer presumably with the regulator's approval. The second calculation will be derived from a more detailed model of the insurer's underwriting risk.
- 1.9 The working party proposes that the regulator prescribe a factor-based formula as a starting point for a risk-based capital analysis. Since it is a starting point, it should be subject to the operational constraints.

- Simplicity The formula can be put on a spreadsheet. This may allow for some complexity in the formulas, as long as the objective of the formulas is clear.
- Input Availability The inputs needed for the formula are either readily available, or can be reasonably estimated with the help of the appointed actuary.
- Conservative When there is uncertainty in the values of the parameters, the parameters should be chosen to yield a conservative estimate of the required capital.
- 1.10 The working party proposes that, with the regulator's approval, an insurer may substitute its own internal model for the factor based formula. The internal model can be a minor change to the factor-based formula, or a completely different model. The regulator may want to set standards for internal models. A set of standards is proposed elsewhere in this report.
- 1.11 The case study will cover two different insurance companies each with three different reinsurance strategies.

B.2 The Insurance Companies

- 2.1 We illustrate the risk-based capital calculations on the hypothetical ABC Insurance Company and the XYZ Insurance Companies. Table 1 gives premium and loss reserve statistics for these insurance companies. Here are some additional details about these companies.
 - The lines of insurance covered by these insurers are standard personal and commercial lines that are typically written by an insurer in the USA. In addition, there are separately identified catastrophe coverages.
 - The distribution of losses was generated with the collective risk model. This model describes the losses in terms of the underlying claim severity and claim count distributions.
 - The claim severity distributions for each insurance company are identical. The claim count distribution for the ABC Insurance Company has a mean that is ten times the mean of the claim count distribution for the XYZ Insurance Company for each line of insurance. As a consequence, expected loss for ABC is ten times that of XYZ for each line of insurance.
 - Three different reinsurance strategies are considered. The first strategy is no reinsurance. The second strategy covers 95% of the losses in excess of \$50 million (\$5 million) of catastrophe losses for ABC (XYZ), but provides no coverage for the other lines. The third strategy adds a \$1 million limit on the non-catastrophe lines.

	ABC Insuranc	e Company	XYZ Insurance Company		
Line of Insurance	Direct Premium Loss Reserve I		Direct Premium	Loss Reserve	
Auto Liability	430,000,000	403,110,711	43,000,000	40,311,071	
Auto Physical Damage	325,000,000	19,455,630	32,500,000	1,945,563	
Homeowners	475,000,000	162,578,183	47,500,000	16,257,818	
Commercial Liability	130,000,000	352,190,005	13,000,000	35,219,001	
Commercial Property	200,000,000	62,204,206	20,000,000	6,220,421	
Total	1,560,000,000	999,538,735	156,000,000	99,953,873	

Table 1

Statistics for the Sample Insurance Companies

B.3 The Loss Model Underlying the Factor Based Formula

- 3.1 In this case study, we give an example of a factor-driven risk-based capital formula. This formula is sensitive to:
 - 1. The volume of business in each line of business;
 - 2. The overall volatility of each line of insurance;
 - 3. The reinsurance provisions; and
 - 4. The correlation, or dependency structure, between each line of business.
- 3.2 The formula requires the insurer to input expected losses (and expected future payments for loss reserves) by line of insurance. Other parameters (specified below) can be determined by either the regulators or the insurers.
- 3.3 The formula is derived from a model that can be visualized as a computer simulation of the losses for each line of insurance. Using the parameters of the model, it calculates the first two moments of the aggregate loss distribution and then estimates the Tail Value-at-Risk at a selected level 99%, ($TVaR_{99\%}$), by assuming that the aggregate loss distribution is lognormal.
- 3.4 What follows is a more technical description of the model.
- 3.5 Simulation Algorithm Underlying Factor-Based Formula
 - 1. For each line of insurance *i*, with uncertain claim payments, do the following:
 - Select a random number χ_i from a gamma distribution with mean 1 and variance *c*.
 - Select a random claim count K_i from a Poisson distribution with mean $\chi_i \cdot \lambda_i$ where λ_i is the expected claim count for line of insurance *i*.
 - For each *i* and for $k = 1, ..., K_i$, select a random claim size, Z_{ik} , from a lognormal distribution with mean μ_i and standard deviation σ_i .

2. Set
$$X_i = \sum_{k=1}^{N_h} Z_{ik}$$
 = Loss for line of insurance *i*.

3. Select a random number *p*, from a uniform (0,1) distribution. For each line i, select β_i to be the *p*th percentile of a distribution with $E[\beta_i] = 1$ and $Var[\beta_i] = b_i$. This gives a multivariate distribution of the β_i 's in which each coefficient of correlation, ρ_{ij} is equal to 1.

4. Set
$$X = \sum_{i} \beta_{i} \cdot X_{i}$$
 = Loss for the insurer.

3.6 Here are the formulas used to calculate the first two moments of *X*.

1.
$$E[X_i] = \lambda_i \mu_i$$

2.
$$E[X] = \sum E[X_i]$$

- 3. $Var[K_i] = \lambda_i + c_i \lambda_i^2$.
- 4. $Var[X_i] = \lambda_i \sigma_i^2 + \mu_i^2 (\lambda_i + c_i \lambda_i^2)$
- 5. $Var[\beta_i X_i] = Cov[\beta_i X_i, \beta_i X_i]$ $= (1+b_i)Var[X_i] + E[X_i]^2 b_i = (1+b_i)(\lambda_i \sigma_i^2 + \mu_i^2(\lambda_i + c_i \lambda_i^2)) + b_i \mu_i^2 \lambda_i^2$
- 6. For $i \neq j$ $Cov[\beta_i X_i, \beta_j X_j] = \lambda_i \mu_i \lambda_j \mu_j \rho_{ij} \sqrt{b_i b_j}$ (Note that we assume that $\rho_{ij} = 1$.)

7.
$$Var[X] = \sum_{i} \sum_{j} Cov[\beta_{i}X_{i}, \beta_{j}X_{j}]$$

- 3.7 Given the mean and the variance of the insurer's aggregate loss distribution one can calculate $TVaR_{\alpha}(X)$ by the following steps. This description will make use of formulas for the lognormal distribution in Appendix A in the book, *Loss Models* by Klugman, Panjer and Willmot¹⁰ (KPW).
 - 1. Calculate the parameters of the lognormal distribution that has the same mean and variance of the insurer's aggregate loss distribution.
 - 2. Calculate the Value-at-Risk at level α , $VaR_{\alpha}(X)$, (i.e, the α^{th} percentile) of the lognormal distribution.
 - 3. Calculate the limited expected value, $E[X^{\wedge} VaR_{\alpha}(X)]$ for the lognormal distribution.

4. Then
$$TVaR_{\alpha}(X) = VaR_{\alpha}(X) + \frac{E[X] - E[X \wedge VaR_{\alpha}(X)]}{1 - \alpha}$$

- 3.8 Using the Poisson distribution to model claim counts and the lognormal distribution to model claim severity are fairly standard assumptions in the actuarial theory of risk and we will not discuss these further. The role of the "b" and "c" parameters is not standard and thus it deserves some discussion.
- 3.9 Introductory treatments of insurance mathematics often make the assumption that there are *n* identical insurance policies each with independent and identically distributed loss random variables X_i . Let X be the sum of all the X_i 's. Then the variance of the loss ratio, X/E[X] is given by $Var[X_i]/(nE[X_i])$. This model implies that as *n* increases, the variance of the loss ratio decreases with the result that a very large insurance company can write insurance with minimal risk.
- 3.10 Let us now apply the same idea to a line of insurance defined by our model above.

$$Var\left[\frac{\beta_i X_i}{E[\beta_i X_i]}\right] = (1+b_i)\left(\frac{\mu_i^2 + \sigma_i^2}{\lambda_i} + c_i\right) + b_i$$

- 3.11 As λ_i increases, the variance of the loss ratio decreases, but it never decreases below $b_i + c_i + b_i c_i$. This means that, unlike the introductory result, an insurer will always be exposed to risk regardless of how many policies it writes in line *i*. This model better resembles the real insurance environment because a changing economic environment always makes the outcome of writing insurance uncertain.
- 3.12 Meyers, Klinker and Lalonde¹¹ (MKL) show how to estimate the *b* and *c* parameters from industry data. Making the assumption that the *b* and *c* parameters are the same for all insurers, they show how to estimate there parameters from the reported loss ratios of several insurers.
- 3.13 An experienced observer of insurer loss ratios by line of business should be able to develop some intuition about the magnitude of the *b* and *c* parameters. Note that loss ratios for large insurers are less volatile than smaller insurers. Note that the *c* parameters affect correlation between individual insurance policies within a line of business, while the *b* parameters affect correlations between lines of business. One can also form some intuition about the kind of events that drive insurer loss ratios across lines of business, such as inflation, and the degree to which these events are predictable.

¹⁰ Stuart Klugman, Harry Panjer and Gordon Willmot, Loss Models: From Data to Decisions, Wiley 1998.

¹¹ Glenn Meyers, Frederik Klinker and David Lalonde, "The Aggregation and Correlation of Insurance Exposure." To appear in the *CAS Forum*, Summer 2003.

- 3.14 Simple analyses of industry accident year loss ratios by line of business can provide a rough quantification of $b_i + c_i + b_i c_i$. As an example, let's suppose that one estimates that the standard deviation of the loss ratio (actual loss divided by expected loss) for a line of business can be no smaller than 20% regardless of the size of the insurer. This would tell us that $b_i + c_i + b_i c_i$ is equal to $0.2^2 = 0.04$. Suppose further that we estimate the standard deviation of inflationary effects to be 5%. This means that $b_i = 0.05^2 = 0.0025$. Then $0.04 = 0.05^2 + c_i + 0.05^2 \cdot c_i$ which implies that $c_i = 0.0374$.
- 3.15 The intuitive ideas expressed in the above two paragraphs are formalized in the estimation procedure provided in MKL.

B.4 Calculating the Risk-Based Capital with a Factor Based Formula

- 4.1 To use the above model to calculate the risk-based capital the regulators, in consultation with the insurers, must determine the following parameters, before the application of the reinsurance, of the loss model for each line of insurance for both current business and unsettled claims for past business.
 - The expected value of the lognormal claim severity distribution
 - The coefficient of variation, CV_i , of the lognormal claim severity distribution
 - The b_i and c_i parameters
- 4.2 The parameters used in this case study are given in Table 2 below.

Would I al ameters for Factor-Daseu Formula							
Line Name _i	Mean _i	CVi	c_i	\boldsymbol{b}_i			
Auto Liability	6,000	7	0.02	0.003			
AL – Reserve	18,000	4	0.02	0.003			
Auto Phys Dam	1,500	2	0.01	0.002			
APD – Reserve	1,500	2	0.01	0.002			
Homeowners	4,000	5	0.04	0.010			
HO – Reserve	5,000	4	0.04	0.010			
Business Liability	16,000	16	0.03	0.003			
BL – Reserve	65,000	10	0.03	0.003			
Business Property	20,000	12	0.04	0.010			
BP – Reserve	20,000	12	0.04	0.010			

Table 2Model Parameters for Factor-Based Formula

4.3 Using formulas in Appendix A of KPW, the insurer then calculates the parameters μ_i and σ_i after the application of reinsurance. The μ_i 's and the σ_i 's for no reinsurance, and for reinsurance covering the excess over \$1 million per claim are given in Table 3.

	No Rein	surance	Excess Reinsurance ov \$1 Million		
Line Name	μ_{i}	σ_{ι}	μ_{ι}	σ_{i}	
Auto Liability	6,000	42,000	5,844	27,821	
AL – Reserve	18,000	72,000	17,522	52,604	
Auto Phys Dam	1,500	3,000	1,500	3,000	
APD – Reserve	1,500	3,000	1,500	3,000	
Homeowners	4,000	20,000	3,975	16,929	
HO – Reserve	5,000	20,000	4,980	17,889	
Business Liability	16,000	256,000	13,169	63,119	
BL – Reserve	65,000	650,000	47,082	134,818	
Business Property	20,000	240,000	16,825	70,720	
BP – Reserve	20,000	240,000	16,825	70,720	

 Table 3

 Moments of the Claim Severity Distributions

4.4 The next step is for the insurer to provide estimates of the expected claim counts, λ_i , for each line of insurance. These estimates are derived by dividing the expected claim severity, μ_i , into the insurer's estimate of expected losses by line of insurance. These insurer estimates are based on its volume of business in each line. Table 4 contains the λ_i 's used in this case study. These λ_i 's were determined by dividing the μ_i 's in Table 3 into the insurer estimates of its expected losses by line when there is no reinsurance.

	ABC Insurance	re Company	XVZ Insurance Company		
Line Name	Expected Loss	λ_i	Expected Loss	λ_i	
Auto Liability	350,000,000	58,333.33	35,000,000	5,833.33	
AL - Reserve	403,110,711	22,395.04	40,311,071	2,239.50	
Auto Phys Dam	250,000,000	166,666.67	25,000,000	16,666.67	
APD - Reserve	19,455,630	12,970.42	1,945,563	1,297.04	
Homeowners	350,000,000	87,500.00	35,000,000	8,750.00	
HO - Reserve	162,578,183	32,515.64	16,257,818	3,251.56	
Business Liability	100,000,000	6,250.00	10,000,000	625.00	
BL - Reserve	352,190,005	5,418.31	35,219,001	541.83	
Business Property	150,000,000	7,500.00	15,000,000	750.00	
BP - Reserve	62,204,206	3,110.21	6,220,421	311.02	

Table 4Expected Claim Counts

4.5 Tables 2, 3 and 4 above give all the information necessary to calculate the mean and variance (or standard deviation) of the aggregate loss distributions for each insurer and reinsurance strategy using the formulas provided in the previous section. The results of these calculations are given in Table 5.

	ABC Insura	ance Company	XYZ Insura	nce Company
Reinsurance	None	XS \$1 Million	None	XS \$1 Million
E[X]	2,199,538,735	2,028,476,777	219,953,873	202,847,678
StDev[X]	209,192,020	186,362,345	27,654,067	19,462,856

Table 5Moments of the Aggregate Loss Distributions

- 4.6 It is worth noting that while the expected losses for ABC are exactly ten times the corresponding expected losses for XYZ, the standard deviations for ABC are less than ten times the corresponding standard deviations for XYZ.
- 4.7 Now that we have the means and variances of the aggregate loss distributions we turn to calculating the risk based capital. Following the formulas outlined in the previous section we calculate the $TVaR_{99\%}$ for each insurer and reinsurance strategy.
- 4.8 As noted above, the $TVaR_{99\%}$ was calculated by approximating the aggregate loss distributions with a lognormal distribution with the same first two moments. The working party did not feel that this was appropriate when the insurer was exposed to catastrophic risk. Thus the formula determines the final risk-based capital for the underwriting risk by adding a catastrophe probable maximum loss to the $TVaR_{99\%}$. In this case study we used the 99th percentile of a catastrophe loss distribution generated by the catastrophe model maintained by Applied Insurance Research. Thus the formula for the risk-based capital is given by:

$TVaR_{00\%}$ –	Expected Net Loss	– Net Loss Reserve	+ Catastrophe PML
<i>yy 1</i> 0	On Current Business		I

4.9 The final risk-based capital calculations for the various reinsurance strategies are included in Table 6.

Risk-Based Capital from Factor Based Formula						
	ABC Insurance Company			XYZ Insurance Company		
Reinsurance	None	Cat Only	All Lines	None	Cat Only	All Lines
TVaR _{99%}	2,821,018,276	2,821,018,276	2,580,135,062	304,943,284	304,943,284	260,723,343
Expected Loss	1,200,000,000	1,200,000,000	1,147,246,365	120,000,000	120,000,000	114,724,636
Reserve	999,538,735	999,538,735	881,230,412	99,953,873	99,953,873	88,123,041
Cat PML	143,000,000	65,000,000	65,000,000	14,300,000	6,500,000	6,500,000
Capital	764,479,541	686,479,541	616,658,285	99,289,411	91,489,411	64,375,665

Table 6
Risk-Based Capital from Factor Based Formula

4.10 While this factor based formula does involve a number of equations, it can be implemented on a fairly compact spreadsheet. The necessary mathematical manipulations are doable by a recently trained actuary.

B.5 Calculating the Risk-Based Capital with an Internal Risk Management Model

- 5.1 It should be clear that there are several alternatives to the model underlying the factor based riskbased capital formula. The working party believes that a model underlying a prescribed riskbased capital should be deliberately conservative. The working party proposal allows the insurer to use its own model for risk-based capital calculations, subject to standards for risk-based capital formulas. This section gives an example of such a model.
- 5.2 The model described here is applied to the ABC and XYZ insurance companies. It differs from the model used in the factor-based formula in the following respects.
 - The choices of the claim severity distributions were not conservative. It uses claim severity distributions that were derived from its own analysis of claim severity.
 - The structure of the model is richer. Random multipliers applied to the claim count distributions across lines allow for a relaxation of the conservative assumption that $\rho_{ij} = 1$ for all lines of business *i* and *j*.
 - The model calculates the aggregate loss distribution directly, rather than approximate the aggregate loss distribution with the first two moments.
 - Determining the needed assets for the insurer by adding the catastrophe probable maximum loss to the $TVAR_{99\%}$ is in essence, adding "worst case scenarios." The catastrophe model was incorporated directly into the internal risk-management model.
- 5.3 Additional details on the construction of this model are given by MKL. Table 7 gives the riskbased capital charge derived from the internal risk management model for the ABC and XYZ Insurance Companies for the various reinsurance strategies.

	ABC Insurance Company			XYZ Insurance Company		
Reinsurance	None	Cat Only	All Lines	None	Cat Only	All Lines
TVaR _{99%}	2,665,306,927	2,649,246,793	2,431,822,820	305,543,931	304,931,938	245,968,540
Expected Loss	1,215,000,000	1,212,045,992	1,158,671,051	121,500,000	121,204,599	115,867,105
Reserve	999,538,735	999,538,735	879,134,113	99,953,873	99,953,873	87,913,411
Capital	450,768,192	437,662,066	394,017,656	84,090,057	83,773,466	42,188,024

 Table 7

 Risk-Based Capital from Internal Risk Management Model

B.6 Provisions for Adverse Deviations in Reserves

- 6.1 The working party also considered methods for including a provision for adverse deviation (PAD) in the reserves. In this section we give an example of how this might work with the factor based formula.
- 6.2 Rather than book the reserves for losses at their expected value, this example first calculates the PAD as the tail value-at-risk at the 75% level minus the expected loss for the reserve in each line of insurance. The PAD calculation is also done for the expected loss in current business.

- 6.3 Next the PAD is calculated for the insurer in total. Because of diversification, this PAD is less than the sum of the PADs for each line of business. The each line of business PAD is adjusted proportionally so that the line of business PADs sum to the overall PAD.
- 6.4 Note that the total assets for the insurer remain the same, and the expected losses remain the same. The PAD's simply shift a portion of the capital over to the insurer's liabilities.
- 6.5 The results of these calculations for the ABC and XYZ Insurance Companies are included in Table 8.

Table 8

Risk-Based Capital from Factor Based Formula with Reserve PADs

	ABC Insurance Company			XYZ Insurance Company		
Reinsurance	None	Cat Only	All Lines	None	Cat Only	All Lines
TVaR _{99%}	2,821,018,276	2,821,018,276	2,580,135,062	304,943,284	304,943,284	260,723,343
Expected Loss +						
PAD@75%	1,343,215,450	1,343,215,450	1,282,664,387	137,436,601	137,436,601	128,555,154
Reserve +						
PAD@75%	1,129,887,753	1,129,887,753	989,316,751	118,954,857	118,954,857	99,750,020
Cat PML	143,000,000	65,000,000	65,000,000	14,300,000	6,500,000	6,500,000
Capital	490,915,073	412,915,073	373,153,923	62,851,825	55,051,825	38,918,169

Appendix C Health Insurance Case Study

C.1 Introduction

- 1.1 This health insurance company case study has been prepared by the WP to illustrate some of the concepts discussed in this report. The main purpose of the case study is to describe calculations that a company might undertake in order to determine total solvency provisions for various risks, and to highlight some of the issues in these calculations.
- 1.2 This case study should be regarded as a general example in which typical health insurance issues are discussed, with a focus on medical insurance. As there are major differences between coverages, policy conditions and legislation of health insurance arrangements in different countries, it is not possible to cover all existing arrangements here.
- 1.3 This Appendix contains methodology for modeling risks in medical insurance and related products. A categorization of the risks is made into volatility, uncertainty and extreme event elements, as outlined in the main report.
- 1.4 In the next section some special features of medical insurance are discussed. The third section comments on the model structure while the fourth section discusses the separate risk categories in more detail, illustrated by case studies. In the fifth section a separate case study for medical inflation is shown. Finally the sixth section discusses methodologies for standardized approaches and aggregation.

C.2 Special Features of Medical Insurance

2.1 In this section some of the special features of medical insurance are discussed. Due to these special features the models for Life and P&C insurance risks may not always be sufficiently equipped to deal with medical insurance.

C.2..1 Medical Inflation

- 2.2 Medical expenses generally show a tendency to increase more than general inflation. There are several explanations for this phenomenon.
- 2.3 Developments in the field of medical technology can lead to increases of the overall expense level in health care. For example, some technological developments have lowered the expenses involved in the treatment of specific illnesses and have provided better outcomes for the persons with those illnesses. Some new technologies have dramatically improved the detection rate of certain illnesses, which then leads to rapid increases in the overall costs of treating those illnesses and usually much improved success rates. Other new technologies have greatly increased the cost of treatment of certain illnesses usually with significantly better outcomes (often the patient living considerably much longer). Finally there are a number of new technologies that have significantly reduced the risk of poor outcomes from certain treatments thus enabling these treatments to be provided to a much wider group of patients.
- 2.4 In the future, new detection technologies, while relatively cheap, are likely to be very widely demanded. Also, the further individualization and increased sophistication of medical interventions is unlikely to reduce the overall rate of growth in the expense levels of health care. The resulting longer life expectancies that are obtained from new medical technologies will also enable some people who benefit from these technologies to consume even more medical resources over their lifetime.

- 2.5 Improved information gathering, recording and reporting leads and will lead to efficiency gains, which enable many more conditions to be detected and/or treated external to the labor intensive hospital setting. But many of these conditions would not have been detected and/or treated prior to these technology changes so the efficiency gains eventually show up as long-term improvements in population health status and, to some extent, longevity outcomes, which are hard to measure or relate back to the technologies in the short term.
- 2.6 As a result of efficiency gains in other sectors of the economy the cost of labor increases in all sectors including the health sector. As there is little efficiency gain in the hospital sector which can reduce the number of staff required the overall expense level of this sector of health care can be expected to become relatively more expensive. The hospital sector in particular is relatively labor-intensive so there are generally less efficiency gains which can be realized through automation than there are in other sectors of the economy. The skill sets of hospital labor are also being constantly upgraded, which is putting further pressure on labor costs.

C.2..2 Political Risk

- 2.7 It is common for democratically elected Governments to make promises in respect of the supply of health care services. In endeavoring to reduce their health expenditure these Governments will then often try to reduce the price of health care by controlling the supply of health care services through various rationing techniques including through the control of prices health care professionals can obtain for their services. These constraints do tend to reduce expenditure in the short to medium term but in the longer term the eventual constraints on supply of quality services create their own political risks.
- 2.8 A further method of reducing Government health expenditure is to regulate both the market for private health insurance and the extent of the services covered by private health insurance. So Governments often dictate policy conditions and premium rates of medical insurance so that it may not be possible to fully adjust rates and conditions to the level commercially desired.
- 2.9 In the field of disability insurance, incidence rates and periods of disablement may also be influenced by Government. Sometimes incidence and periods of disablement are influenced by Government mandated benefit levels or Government mandated underwriting requirements.

C.3 Modeling Structure

3.1 The modeling structure includes a 'best estimate' and various types of risk. The best estimate is the expected claims liability that will result for the insurer. Due to various types of risks, the best estimate will in reality almost never materialise, but a higher or lower claims liability will occur.

The best estimate is discussed in the first subsection, risk types are discussed in the second subsection.

C. 3.1 Best Estimate

3.2 The best estimate is the expected liability under the in-force contract. We distinguish between the best estimate in the first period and in the periods thereafter. The term is expressed as a "period" because medical insurance modeling is in some cases done annually, and in others quarterly or monthly.

3.3 The best estimate (BE) in the first period is determined as:

BE first period = n^*d^*l

with

n : average number of insured in the in force portfolio during the period;

d: discount factor applied to reflect that claims occur on average in the middle of the period. In projections over short periods or in low interest rate environments d is usually excluded from the equation.

l: expected incurred claims liability per insured.

- 3.4 In this formula the impact of lapses is ignored, which leads to a more conservative estimate of the liability. In the longer term, lapses may result in an antiselection effect against the insurer (i.e. higher lapse rate for insureds who are less likely to claim). However the effect of antiselection is limited in the short term, especially when premiums have been received in advance for the entire contract period.
- 3.5 The approach described above can be used for products where premiums are periodically adjustable so that a best estimate projection is only needed for the first period. In the case of products with multi-period guarantees, or where there are conditions that restrict the insurer's ability to increase premium rates to reflect increasing claim costs, a more sophisticated model approach is required. Such an approach takes into account the development of the expected incurred claims amount and the impact of lapses over longer periods.

C.3.2 Risk Types

- 3.6 Three types of risks are distinguished which will cause the actual liability to deviate from the best estimate.
- 3.7 *Volatility Risk*: the risk that the actual frequency and severity of claims differs from the best estimate in the particular period under consideration, but the expected liability for the average insured in the whole population is correctly estimated. When projections are performed for monthly or quarterly periods then it is also important to consider the seasonal effects on the volatility of claim rates.
- 3.8 Uncertainty Risk: the risk that the expected liability per insured is incorrectly estimated at present or it is correctly estimated at present but changes over time. Usually for multi-period models it is important to include at least the first order changes over time. These will be related to the change in the demographics of the insured population (for example the change in the average hospital utilization rates at older ages is greater than at younger ages) and the expected medical inflation rate for that insured population (this also tends to be higher for middle aged and older populations than younger persons). For some types of contracts, there can also be a moral hazard risk: the risk of individual insured persons deliberately selecting against the insurer. This can particularly happen in cafeteria arrangements or in any insurance arrangement when a number of choices are available to insured individuals.
- 3.9 *Extreme event/Calamity risk*: the risk of large one-off accumulation of claims outside the normal experience pattern.

C.4 Modeling Techniques

4.1 In this section the modeling of volatility, short term uncertainty and extreme event risk is discussed. A separate, more extensive case study for long term uncertainty caused by medical inflation is contained in section 5. For the short term risk model, the time period chosen is one year.

C.4.1 Volatility

- 4.2 The volatility risk is determined only for the first period of projection¹². To determine volatility risk, the parameters driving frequency and severity of claims are assumed to be fixed and given. The remaining risk is the risk that the claims volume is different from its expected level due to randomly occurring deviations.
- 4.3 The volatility risk can be modeled with a probability distribution of the frequency and severity of the individual claims.
- 4.4 We define:

N: the number of claims;

 X_i : the claim size of the *i*-th claim, with i = 1, 2, ..., N;

 $S = \Sigma X_i$, the total claims volume.

4.5 Furthermore we assume that:

The incidences of claims are mutually independent (i.e., there is no single cause leading to claims by different insureds).

The claim severities X_i are also independent and all have the same probability distribution.

- 4.6 Although these assumptions do not completely reflect reality, they work sufficiently well for a portfolio of reasonable size. Dependence between insureds caused by overall circumstances affecting the whole population is not reflected in the volatility risk. For example, if the costs of surgery increase as a result of new technologies invented, this will simultaneously lead to a higher claim severity for all insureds. However, this type of dependence will be captured in the uncertainty risk. Hence for the volatility risk calculation it is assumed that given the general cost level of surgery, the costs arising from individual claims are independent of each other.
- 4.7 An exception occurs when several people are involved in the same accident. In this case the incidences of their individual claims are not independent of each other. However, considering that accidents normally only involve a limited number of people, for a portfolio of several hundred insureds or more the impact of this type of dependency is very small. For accidents which can affect a large number of people, for example epidemics, industrial accidents or terrorist attacks, a separate 'calamity' risk charge needs to be added.
- 4.8 We are now interested in fitting a probability distribution for the total loss *S*. This is done as follows. Firstly, expectation, variance and skewness of *S* are estimated. Then the normal power or translated gamma distribution is fitted to the estimated moments. As a result the expectation, variance and skewness of the estimated probability distribution of *S* are equal to the estimated moments. Both distributions can be used and generally will give outcomes in the same range. Also, when the number of independent insureds is large, the normal distribution will also give a good approximation due to the Central limit Theorem. For very low values of the skewness, the translated gamma distribution can cause computational difficulties.

¹² See the section on 'Time Horizon' in the main report.

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4.9 For the expectation, variance and skewness of S, we have:

$E[S] = E[N]E[X_i]$	(1)
$Var[S] = E[N]E[X_i^2]$	(2)
$\gamma[S] = E[N]E[X_i^3] / Var[S]^{3/2}$	(3)

E[S] is the best estimate of the liabilities. As can be seen from the formulae above, the estimates of expected value, variance and skewness of S are found by estimating E[N], $E[X_i]$, $E[X_i^2]$ and $E[X_i^3]$. This can be done in the following way: E[N], the expected number of claims is estimated as:

E[N] = number of insureds * observed average claims frequency (4)

 $E[X_i]$ is estimated as the average of the observed claim amounts, with a possible adjustment if claims in the next year are expected to be higher on average than in previous years. Similarly, $E[X_i^2]$ is estimated as the average quadratic claim amount, and $E[X_i^3]$ as the average third power of the observed claim amounts.

4.10 By using the average observed claims frequency for the portfolio as a whole we ignore the heterogeneity that is most likely present in the portfolio. For example, claim frequency increases with age of the insured. It can be proven that by ignoring heterogeneity a stop-loss safe estimation of the aggregate loss distribution is obtained, meaning the estimate contains some conservatism especially in the right tail of the distribution (see 'Stochastic ordering' by Kaas, Goovaerts et al).

C.4.2 Case Study Volatility

- 4.11 In this case study it is shown how a distribution function for the volatility risk of an arbitrary portfolio was estimated. The portfolio consists of 130,000 policyholders with an average claim frequency of 5% per year. The mean annual claim size is \$4,125, which is simply the observed average in the latest year, with a possible loading for claims inflation/indexation. The input data used for the calculation are shown in table 1.
- 4.12 Table 1: portfolio and claims information

Number of policies:	130,000
Average claim frequency per insured	5%
Expected aggregate number of claims	6,500
Claim severity distribution:	
Mean (\$):	4,125
Variance:	70,074,170
Third central moment:	9.28072E+12

4.13 Table 2 shows the first three moments (mean, standard deviation and skewness) of the aggregate losses *S*, calculated according to formulae 1,2 and 3.

Table 2: moments of the aggregate losses S according to formulae 1,2,3

Mean	26,811,351
Variance	455,482,101,858
Skewness	0.20

4.14 With the estimated moments of S given as input we will now fit three types of probability distribution: the translated gamma, the normal power and the normal distribution. This gives the following results:

Translated gamma distribution	28,478,025
Normal distribution	28,381,385
Normal power distribution	28,478,771

4.15 Table 3: 99% upper limit of aggregate losses S with respect to volatility risk

4.16 The 99% point of the distribution function of the total liabilities is given below, meaning the total liability will be equal to or lower than the amount shown with a probability of 99%. As can be seen, the three approaches produce very similar results due the large number of (assumed) independent risks.

C.4.3 Uncertainty

4.17 Uncertainty risk can be split into the uncertainty risk in the first coming period and all periods thereafter. This split is useful to make as the short term uncertainty is of a different nature and more commonly present than the long term uncertainty in medical insurance products. The nature of the product and the possibility to adjust premium rates determine whether uncertainty risk beyond the first year needs to be considered. If rates can be adjusted periodically, this obviously reduces the long term uncertainty risk. But in many markets there is also the political factor that governs the extent to which premium rates can be adjusted. Usually the more politicized the rate setting process the greater the risk to the insurer of not being able to adjust premium rates to fully compensate for past errors in the estimation of future liabilities. In the next subsection, modeling approaches for the first year/short term uncertainty risk are discussed. The long term uncertainty risk for medical insurance is constituted by medical inflation risk and this is discussed in section 5.

C.4.4 Short Term Uncertainty Risk

- 4.18 The short term uncertainty risk in medical insurance can be treated in the same way as is done for P&C products, as described in the P&C case study. Using an approach that is based on loss ratios, the earned premium component of the loss ratio should be determined as the earned premium which is allocated to the calendar year under consideration. This earned premium can significantly differ from the written premium received minus expense allowances in the case that there is an ageing reserve. An ageing reserve allows the written premium to stay level over time or increase less while utilization increases due to the ageing of the insured population. In the presence of an ageing reserve the earned premium equals the written premium minus expenses allowances minus (plus) any addition (subtraction) from the ageing reserve.
- 4.19 The framework outlined in the P&C case study can be applied to medical insurance as follows:
- 4.20 There is a single line 'medical insurance' for which parameters b_i , c_i , λ_i , μ_i and σ_i need to be estimated. As we are looking at a single line only, the index *i* can be omitted so we will use *b*, *c*, λ , μ and σ instead.
 - λ : expected claim count (number of in-force policies * expected claim frequency);
 - μ , σ : parameters of the individual claim severity distribution.
 - *b,c*: parameters reflecting systemic risk in claims frequency and severity.

4.21 Following the approach outlined in the P&C case study, b and c can be estimated as follows: The variance of the annual loss ratio of an imaginary, infinitely large portfolio equals:

$$Var(loss ratio) = (b + c + bc) * E[loss ratio]^{2}$$
(5)

4.22 As an approximation for the loss ratio of an infinitely large portfolio, one can use the industrywide loss ratio for medical insurance. If for example, the expected loss ratio equals 60% and the standard deviation of the industry-wide loss ratio equals 20% then we have:

Var(loss ratio) =
$$(b + c + bc)^* E[loss ratio]^2$$
 hence
 $0.2^2 = (b + c + bc)^* 0.6^2$ (6)

4.23 Also, *b* is the sole parameter indicating the variability of inflationary effects. As *b* is defined as the variance of a random variable β (as mentioned in the P&C case study) with expectation 1, we have:

1+ Medical Inflation[t+1] = β *(1+ average medical inflation).

Therefore,

```
Variance (1+ Medical inflation[t+1])=
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Var[\beta]* (1+average medical inflation)<sup>2</sup>.
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Also,

Variance (1 + Medical inflation[t+1]) = Variance (Annual Medical Inflation])and $b = Var[\beta]$.

It follows that:

 $b = Variance (Annual Medical Inflation]/(1+average medical inflation)^2$.

- 4.24 From equations (6) and (7) we can now derive the values of b and c. The P&C case study outlines the approach to determine the capital requirement based on the b and c parameters, as part of a standardized or advanced approach, and as a stand-alone line of business or as part of a P&C company.
- 4.25 We can also find the capital for the uncertainty risk alone by assuming independence of the volatility and the uncertainty component, as follows:

 $(Capital uncertainty)^2 =$

(Capital uncertainty and volatility combined)² -/- (Capital for volatility)².

4.26 As in many jurisdictions medical insurance is underwritten by Life insurance companies rather than P&C companies, incorporation into a capital requirement for a Life company also needs to be considered. This will be addressed further in section 6.

(7)

C.4.5 Extreme Event Risk

- 4.27 The determination of the effect of an extreme event/calamity on a health insurance product will depend largely on the type of product, the type of calamity and the country that it is written in. A calamity, involving a large number of persons becoming ill or disabled for some period of time could have a major effect on a disability income product but very little effect on a hospital insurance product, written by the same insurer on the same group of lives.
- 4.28 Not all calamities require extensive hospitalisations of large numbers of people. Even if large numbers of people did require lengthy hospitalisation as a result of a calamity it is unlikely that the capacity of the local hospital system would cope. Often Governments will quickly react to calamities by providing additional facilities and support perhaps using defence force medical facilities or decommissioned hospitals. In these circumstances the cost is usually born by the taxpayer. Also in a state organised health insurance system if Government support was not forthcoming in the event of a calamity then all insurers or a group of insurers operating in the geographic area of the calamity would be likely to have financial difficulties together and the Government would not wish to see the market fail due to the eventual effect on Government outlays so capital adequacy rules would tend to be relaxed and/or regulatory measures introduced to ensure the rest of the industry assisted as necessary.
- 4.29 Reinsurance also can play a part in reducing the financial effect of a calamity. The extent of reinsurance support on an insurance product will also depend on the product and the country the product is written in. For products written in countries where there is little political inference generally insurers will have obtained catastrophe reinsurance to cover the effects of calamities. In some countries where there are taxation incentives to individuals or employees to be covered by medical and hospital expense insurance the Government may not even permit insurers to reinsure risk out of the local industry because of the taxation implications. In these environments there are often internal reinsurance arrangements or legislation compelling financially sound insurers to "prop-up" those that are not so sound financially.
- 4.30 As normally no or only very scarce data are available to calibrate extreme event risk, a pragmatic approach needs to be taken to determine a capital requirement. One can argue that the same causes that underlie the extreme event risk for mortality also apply to accident and medical insurance claims. Circumstances that cause increased mortality can cause increased medical and disability claims to the same extent. Hence, in line with the mortality approach, the combined capital for extreme event and the volatility and first year uncertainty risk can be determined by assuming claim frequency will double under these extreme circumstances while claim severity remains unchanged.

C.5 Case Study Medical Inflation

- 5.1 In this section a case study for the risk of long term medical inflation is discussed. The case study contains the following elements:
 - 5.1 Medical inflation
 5.2 Portfolio composition
 5.3 Expected individual claim size by age/ age cohort
 5.4 Rating structure
 5.5 Simulation
 5.6 Results

C.5.1 Medical Inflation

- 5.2 On the basis of historical data, future medical inflation can be modeled using statistical and econometric modeling techniques.
- 5.3 The model applied in this case study is an autoregressive time series of the second order:

 $INF(t) = c_0 + c_1 INF(t-1) + c_2 INF(t-2) + random error(t)$ with:

INF(t): medical inflation in year t;

 c_0, c_1, c_2 : model parameters.

random error (*t*): random, unexplained annual change of medical inflation rate.

- 5.4 The second order structure of the model implies there is a direct dependence between the inflation in a certain year and that in the two preceding years. As a result we have:
 - Autocorrelation between successive observations: if the medical inflation is above (below) average in a certain year, it is likely to be above (below) average as well in the next year;
 - Cyclicality: the second order of the model allows the possibility that there is a cyclical pattern in the observed inflation rates: possibly periods of several years with inflation rates above average are succeeded by several years with inflation rates below average.
- 5.5 It should be noted that it is assumed in this model that medical inflation is equal for all ages. When medical inflation is higher for higher ages than it is for lower ages, the inflation for a portfolio in run-off, with an increasing average age, will be higher than the overall medical inflation for the entire population.

C.5.2 Rating Structure

5.6 The current rating structure and the possibility to changes rates in accordance with experience should be taken into account. Rate adjustments may be limited due to government restrictions or market movements. The model allows for rate adjustments equal to the minimum of:

The annual medical inflation rate for the insured population as a whole;

A maximum allowed annual rate increase.

5.7 These restrictions are given purely by way of example however different types of premium restrictions may be in force in various jurisdictions.

C.5.3 Portfolio Profile

5.8 The age distribution of the portfolio is given at the beginning of the projection period. No future new business is included in the current model setup. However for as far as the rating structure for new business is the same as for existing business, the model can easily be extended to allow for this. If a different rating structure is introduced for new business, one would have to allow for this by building a second model with the new rating characteristics. Expected lapse rates are assumed to be age dependent, decreasing with the age of the insured.

C.5.4 Claim Size by Age/Age Cohort

5.9 In the case study, the annual medical expenses increase exponentially with age, by way of an example. The values used can be replaced by any age-dependent estimate of the annual liability per insured, to represent expected medical expenses by age (group) in the present year. The effects of medical inflation are not yet taken into account in this stage of the calculation.

C.5.5 Running the Model Simulation

- 5.10 On the basis of the input described above model simulations are performed with which future medical inflation rates are simulated. Annual premium adjustments follow as a function of the inflation rates.
- 5.11 Volatility in lapses or incidences of claims of individual policyholders are not modeled by way of stochastic simulation. As the model projects over a very long period, e.g. 30 years or more, the effect of randomness of individual incidences of lapses and/or claims on policyholder level will be negligible. The uncertainty in the level of medical expenses in future years is a far more influential factor in determining the total liability.
- 5.12 Randomness in individual claim incidences is included in the volatility risk model (see section 4), but only in the first period.

C.5.6 Results

- 5.13 The simulation produces output in the following form:
- 5.14 A set of premium and claims cash flows in every future year that is included in the model for every run of the simulation.
- 5.15 A present value of claims and premiums for every scenario, based on a fixed discount rate or yield curve.
- 5.16 An estimate for the probability distribution of the present value of claims, the present value of premiums and the present value of claims minus premiums.
 - 5.17 The present values of claims, premiums and their differences are expressed as a multiple of the risk premium for the portfolio as a whole at the inception date. The estimated probability distributions are shown graphically below.



Density of Net Liability by Age Cohort

5.18 In the graph, the density functions of the distribution of liabilities are shown for three different ages: 30, 40 and 50. The values are expressed as a multiple of the risk premium for the individual at the inception date of the projection. For example for the 40-year old insured the expected present value of the net liability (claims minus premiums) is approximately equal to 11 times the

annual risk premium for the insured at the inception date. A capital requirement can be determined as a percentile or TVaR (e.g. 99% or 99.5%) of the distribution. The medical inflation risk affects all policyholders simultaneously therefore there is no diversification between policyholders. As a result, a capital requirement, i.e. VaR/TVaR value, for a portfolio can be determined as the sum of the capital requirements for each individual policyholder or portfolio cohort.

C.6 Standardized Approach and Aggregation

6.1 In this section, a possible standardized approach for long-term medical inflation is discussed, as well as linking the different components discussed into an overall capital requirement.

C.6.1 Standardized Approach for Long Term Medical Inflation

- 6.2 Although it is very difficult to determine a universally valid standardized approach for medical inflation, one could proceed as follows. Starting from the recommendations in chapter 7 of the main report, three factors are distinguished in establishing a capital requirement under a standardized approach.
 - 1. μ : company specific expected losses;
 - 2. *k*: specific to the line of business, prescribed by the regulator;
 - 3. *v*: company specific factor.
 - 1. As an exposure measure μ , the total risk premium for the portfolio in any given year can be used.
 - 2. The second factor k can be determined by the regulator, as the ratio of the present value of future claims liabilities in a worst case, over the current total risk premium of the portfolio. The simulation model as described in the previous sections can be used to determine this factor based on a number of general portfolio characteristics such as the average (and possibly spread of) remaining term of policies until expiration. Note that this factor only reflects the future claims liability, and not the premiums still to be received. This distinction is made because medical inflation is a phenomenon which affects all companies, while the possibilities of premium adjustments may vary by company.
 - 3. The third factor v is a company specific factor reflecting the rating of a particular company. This factor should reflect the adequacy of current rates as well as the possibility of adjusting rates in case of unexpectedly high future medical inflation. In the most extreme situations, v will be 100% if no premiums can be charged at all in future years or 0 if future risk premiums can be charged to fully cover the worst case claims liability at all times.
- 6.3 If premiums can be adjusted without limitation but are currently inadequate, some additional capital will be required for the period that premiums will be inadequate, as the management of a company may decide not to raise premiums directly.
- 6.4 Where rate increases are subject to approval by a government body at the time they are submitted and this is based on judgement and political factors rather than a rigorous numerical rule, it is almost impossible to derive a factor reflecting this practice.

C.6.2 Aggregation of Capital Requirements for the Various Risk Components

- 6.5 In this case study, capital requirements have been determined for:
 - 1. Short term volatility and uncertainty risk combined;

- 2. Short term extreme event (calamity) risk;
- 3. Long term medical inflation risk.
- 6.6 In order to derive an overall capital requirement for all of these risks combined, the following observations are made:
- 6.7 Short term volatility/uncertainty and extreme event risk can be regarded as more or less independent of each other. Extreme event risk, such as the outbreak of epidemics, is caused by unexpected one-off events which are generally unrelated to other developments leading to increased claims experience within the course of one year.
- 6.8 In the main report it is recommended that a capital requirement be determined as the maximum of two measures, one related to the first year, and one to all future years. Applying this recommendation to the health case study, the minimum overall capital requirement is found by taking the maximum of:

1. The capital required for category 1 and 2 combined at a very high confidence level; 2. The capital required for category 3 at a fairly high confidence level.

- 6.9 Capital requirements for category 1 have been determined using the approach for the P&C case study. However, as in many jurisdictions health insurance is underwritten by Life companies, consideration also needs to be given to correlations with other risks that life insurers are facing.
- 6.10 In section 7.2. of the main report, it is described how capital requirements for separate components of risks can be combined into a single overall capital requirement. This requires the determination of correlations between different types of risk. Although these correlations can best be chosen individually for each country or jurisdiction, it can be stated in general that:
- 6.11 Medical inflation tends to be generally higher than general inflation. The aggregate rate might be reasonably constant over time but it will vary between in-hospital¹³ and out-of-hospital services and also vary substantially between various types of out-of-hospital services (for example medical, pharmaceutical¹⁴, dental and optical).
- 6.12 Medical inflation tends to be correlated with economic prosperity, as medical inflation is driven by technological development. Hence the extraordinary growth in the overall cost of pharmaceuticals and surgical implants.
- 6.13 As a result, medical inflation is most likely negatively correlated with mortality trend in the long term.
- 6.14 In the short term, mortality and sickness, and therefore health claims, can be positively correlated for some health insurance portfolios in some countries.
- 6.15 Mortality and morbidity calamity are highly correlated as they are the result of the same or similar causes.
- 6.16 Short term and long term type risks generally have low correlation to each other due to the fact they are manifest in different periods of time, hence driven by different causes.

¹³ Some components of hospital cost tend to have much higher inflation rates than other components. For example the overall costs of surgical implants had explosive growth in the last decade of the twentieth century. ¹⁴ In many countries pharmaceutical costs have an extraordinary high inflation rate.

Appendix D Market Risk

D.1. Definition of Market Risk

- 1.1 Market risk results from the volatility and uncertainty risk inherent in the market value of future cash flows from insurer assets and liabilities. Market risk is thus driven by exposure to movements in the level of financial variables. These include: stock prices, interest rates, exchange rates or commodity prices and the exposure of options in either the assets or liabilities to movements in underlying pricing variables such as movements in the actual or implied volatility of prices and options.
- 1.2 A related risk is liquidity risk, the risk that various events will require the insurer to attempt to liquidate various asset holdings prematurely on short notice and under unfavourable terms. A trigger for liquidity risk could be market risk, but other operational and policyholder behavior risk factors could be the trigger. The Working Party suggests that liquidity risk is better placed within Pillar 2 actions of the supervisor than to require a Pillar 1 requirement.
- 1.3 In addition to the volatility of market risk affecting the net market value of the insurer's assets, market risk may also affect the liabilities (and net surplus position) as follows:
 - 1. Changing asset yields will affect the market value of the liabilities through their effect on the rate(s) used to explicitly or implicitly discount the liability cash flows.
 - 2. Changing asset returns (yields) may affect the amount and/or timing of future liability cash flows. Policyholders may be entitled to some form of profit sharing related to actual and/or historical asset returns. In this respect, the different types of 'interest' profit sharing within the global insurance market might be categorised into the following three groups:
 - A. Profit sharing that is fully based on objective indicators of the performance of the capital market, e.g. an indicator of the actual interest rate level that is calculated and published periodically by a government agency, or a stock market index. The company may or may not actually be holding these asset referenced benchmarks to back the liabilities.
 - B. Profit sharing that is somehow related to the actual performance of the company ('performance-linked'), particularly with respect to the company's investments. Note: This type includes the systems where the management is entitled to 'declare the bonus rate'.
 - C. Profit sharing that is related to the actual performance of the assets that are 'locked-in' at the policy holders discretion, i.e. policyholders themselves are, at least partially, responsible for the way their premiums are invested. Note: The typical example of this type of profit sharing in Life insurance is the profit sharing that is (implicitly) offered with Unit Linked/Universal Life (UL) products in Europe or variable (separate account) products in the US.
- 1.4 All three types of profit sharing may also include certain types of guarantees offered by the insurer, e.g. a bonus rate that will never be negative or a minimum level of the maturity benefit.
- 1.5 Changes in asset returns in the external market may affect the amount and/or timing of future liability cash flows by inducing policyholders to "arbitrage" the external returns with those available in the policy be either surrendering or paying additional premiums. (Note, this policyholder behavior may not always appear "rational" due to differing tax implications and liquidity/risk preferences of the policyholder.)

1.6 The following definition of market risk for insurers is proposed:

Market risks relate to the volatility of the market values of assets and liabilities due to future changes of asset prices(/yields/returns). In this respect, the following should be taken into $account^{15}$:

- Market risk applies to all assets and liabilities
- Market risk must recognize the profit sharing linkages between the asset cash flows and the liability cash flows (e.g. liability cash flows are based on asset performance)
- Market risk includes the effect of changed policyholder behavior on the liability cash flows due to changes in market yields and conditions.

D.2 Types of Market Risk

- 2.1 The principal sources of market risk are:
 - Interest Rate Risk- risk of exposure to losses resulting from fluctuations in interest rates.
 - Equity and Property Risk- risk of exposure to losses resulting from fluctuation of market values of equities and other assets.
 - **Currency Risk** risk that relative changes in currency values decrease values of foreign assets or increase the value of obligations denominated in foreign currencies.
 - **Basis Risk** risk that yields on instruments of varying credit quality, liquidity, and maturity do not move together, thus exposing the company to market value variation that is independent of liability values.
 - **Reinvestment Risk** risk that the returns on funds to be reinvested will fall below anticipated levels.
 - **Concentration Risk** risk of increased exposure to losses due to concentration of investments in a geographical area or other economic sector.
 - Asset/Liability Mismatch Risk- to the extent that the timing or amount of the cash flows from the assets supporting the liabilities and the liability cash flows are different (or can drift apart) the insurer is subject to asset/liability mismatch risk.
 - Off-Balance Sheet Risk- risk of changes in values of contingent assets and liabilities such as swaps that are not otherwise reflected in the balance sheet
- 2.2 Market risk can only be measured appropriately if the market value of assets, as well as the market value of the liabilities, is measured adequately. Market values of assets can generally be deduced from listings in the various securities markets. Due to the lack of a real market for insurance liabilities, the market value of insurance liabilities can be approximated through evolving market/fair value techniques. The concept of the 'replicating (asset) portfolio', defined in section 6.2, is a useful concept in measuring the market value of insurance liabilities.
- 2.3 In general, life and health insurers purchase assets to match their liabilities. Historically this has not been true for non-life insurers who tend to manage separately the results from underwriting and investments. While all of the assets of an insurer are available to provide against adversity, it is common risk management practice for insurers to implicitly or explicitly allocate their assets for one of the following purposes:
 - To support insurance contract liabilities
 - To represent economic capital
 - To represent free surplus

¹⁵ This also includes the situation where policy benefits, e.g. pensions within Life insurance, are indexed to adjust for price or wage inflation (either 'unconditionally' or 'conditionally' depending on the available capital). In that case there is inflation risk. Note: Inflation risks related to Health and Non-Life insurance benefits or future internal expenses are ignored here, since they are considered as special types of 'trend risks' and 'operational risks' respectively.

- 2.4 Sizeable portions of an insurer's liabilities can have durations comparable to readily available high quality liquid assets in the local market. In these situations it is possible to select assets whose cash flows can provide a very close match to the liability cash flows. In other words, a replicating portfolio of assets is available in the market. In this situation, market risk focuses on the volatility of the market value of the actual assets held and the market value of the replicating portfolio of assets and the ability of the insurer to manage that volatility. This type of market risk will be called **Type A** risk and it also includes the effect of volatility on an insurer's stand alone surplus or economic capital assets.
- 2.5 The long-term duration of some insurance (especially life insurance) liabilities requires the consideration of long term rates of reinvestment since replicating portfolio assets of sufficient duration may not be currently offered in the market. Measuring market risk for these liabilities entails considerable uncertainty about the composition of the replicating portfolio and the manner of its reinvestment to mature the underlying cash flows. Lowered rates of reinvestment in the future are typically of concern. In addition, life insurance contracts may contain various complex, long term options and/or guarantees for which replicating market positions may not currently exist (e.g., death and maturity guarantees on variable annuity products). These latter two types of market risk will be called **Type B** risk.
- 2.6 The assets and liabilities of an insurer are subject to Type A and possibly Type B risk. Shorter term insurance contracts without complex to value embedded options or guarantees are subject to Type A risk. Long-term insurance contracts and/or those containing complex embedded options or guarantees may be subject to both Type A and Type B market risk.

D.3 Time Horizon

- 3.1 In contrast to market risk for banks, where the risk measurement time horizon is generally defined in terms of days or weeks, insurer market risk is more appropriately determined using a time horizon of one year. One year recognizes the generally less active trading environment of insurers with respect to their asset and liability cash flows. One year reflects a conservative view of the time required by a supervisor to assume control of the affairs of a weakened insurer. One year reflects a conservative view of the time required for an insurer to rebalance a mismatched portfolio of assets and liabilities (i.e., presuming replicating portfolio assets are available). Failure to rebalance such a portfolio within one year is more appropriately the subject of Pillar 2 type supervisory measures.
- 3.2 When the market risk of liabilities is compared with the market risk of the assets used to support them, the net market risk for these liabilities can be measured. This net asset/liability mismatch position is generally subject to specific asset/liability management (ALM) policies and procedures of the insurer. Type A risk is diversifiable to the extent that another manager could immediately eliminate the mismatch risk through rebalancing the portfolio.
- 3.3 The Type B market risk for cash flows which extend beyond the term of currently available replicating portfolio assets requires consideration of future reinvestment decisions and reinvestment rates in the future. To a certain extent, market risk for these liabilities involves systematic (undiversifiable) risk due to the limited availability of (parts of) the replicating asset portfolio or, at least, uncertainty about its composition. In theory, these risks must always be assessed for the full remaining term of the liabilities. The best fitting replicating portfolio assets must be reinvested in accordance with the insurer's policies and practices with respect to investments so as to provide for the lengthy future cash flows. The requirement of a full term time horizon is considered necessary due to the considerable uncertainties involved in providing for future cash flows beyond the term of currently available replicating portfolio assets.

D.4 Confidence Level

4.1 The market risk capital requirements should be determined in a manner consistent with the overall goal for the confidence level of Pillar 1 capital requirements. For example, they could be determined for all risks such that there is a very high (e.g., 99% CTE) confidence level that the assets of the insurer would be sufficient in one year's time to provide for the policy liabilities determined one year later at a moderate (e.g., 75% CTE) level. In addition, a second condition may also be imposed, such as, if the present value amount of the policy liabilities determined at time zero for all future durations at a fairly high (e.g., 90 or 95% CTE) confidence level is greater, then this amount should be held.

D.5 Advanced Approach – Type A Risks

- 5.1 This section outlines the advanced approach to be used in determining a Pillar 1 capital requirement for Type A market risks. Type A risk may be present in any of the cash flow generating assets and liabilities of an insurer.
- 5.2 The most advanced approach for determining Type A risks would involve the use of risk models by the insurer. These models would need to satisfy the requirements of the supervisor as suggested elsewhere in the WP report. The market value of assets or liabilities with future cash flows can usually be determined with reference to the financial markets for similar or identical instruments. Similarly the volatility of their market value can also be deduced. For future liability cash flows, especially insurance contract cash flows, their market values and market value volatility can be approximated through evolving market/fair value techniques. The concept of the 'replicating (asset) portfolio', defined in section 6.2, is also a useful concept in measuring the market value of insurance liabilities.
- 5.3 Market risk should include provision for both specific risk (e.g., perhaps as implied by the credit spread inherent in the yield of securities offered by the issuer) and general market risk (e.g., general sensitivity to future rates of return).
- 5.4 Market risk can be determined by modelling cash flows over a broad range of economic scenarios using stochastic modelling for the time horizon specified and the confidence level desired. The time horizon for this modelling would be one year at a high (e.g., 99% CTE) confidence level.
- 5.5 In situations where the insurer has a block of insurance contracts which exhibit only Type A market risk, the insurer may choose to conduct integrated modelling of the projected future cash flows resulting from the insurance contracts and their matching assets. Such modelling must reflect the actual asset allocation, reinvestment policies and practices of the insurer for that business. At the end of the one year time horizon, the reinvested matching assets must be sufficient to mature the then remaining liabilities with a prudent level of confidence (e.g., 75% CTE).

D.5.1 Practical Approximations

- 5.6 These might be considered by supervisors depending on their local circumstances and the appropriateness of the approximation.
 - Allow for the use of a deterministic liability basis at the end of the one year horizon (rather than a multi-scenario or stochastic model approach at the 75% CTE level).
 - Replace the stochastic modelling during the one year horizon with a series of deterministic scenarios designed to stress test economic scenario shocks at the 99% CTE level. Stochastic modelling of the resultant shocked portfolio after one year would then be required at the 75% CTE level.
D.6 Advanced Approach – Type B Risks

- 6.1 This section outlines the advanced approach to be used in determining a Pillar 1 capital requirement for Type B market risks. Type B risk may be present in any of the cash flow generating assets and liabilities of an insurer.
- 6.2 The most advanced approach for determining Type B risks would involve the use of risk models by the insurer. These models would need to satisfy the requirements of the supervisor as suggested in this report. Many of the same modelling requirements outlined for Type A risks are also applicable to Type B risks.
- 6.3 The appropriate time horizon for measuring this type of market risk is the entire duration of the (longer and containing complex options)) liability cash flows. The general market risk component can best be measured at an advanced level through modelling of the insurer's actual reinvestment policies and practices. Separate provision need also be made for specific risk inherent in the asset and liability cash flows. Specific risk results from an adverse movement in the price of an individual security owing to factors related to the individual issuer. The confidence level chosen will be the greater of 2 options:
 - A very high (e.g., 99% CTE) confidence level that the assets will be sufficient in one year's time to provide for the policy liability cash flows determined at a moderate (e.g., 75% CTE) level at that time.
 - A fairly high (e.g., 90 or 95% CTE) confidence level that the assets will be sufficient to provide for all future policy liability cash flows.

The following sub-sections describe in considerable detail the level of sophisication needed for the advanced approach.

D.6.1 Modelling Process

- 6.4 The modelling process begins with an identification of the assets and liabilities to be modelled. In particular, the process for generating their future cash flows under varying economic scenarios must be understood (i.e., the impact of embedded options). For this to be possible, the primary risk factors affecting market risk must be identified (e.g., interest rates, equity returns, property values, inflation etc.), and defined for their impact on policyholder and company behaviors/strategies. This must then all be modelled as part of an integrated set of economic scenarios. If the market risk for the liabilities is to be determined separately from the actual assets used to support them, then the concept of a replicating portfolio of assets will need to be employed. The combined asset and liability future cash flows will need to be modelled in an integrated manner to allow for a) asset/liability linkages, b) pass-through of risks to policyholders, c) reinvestment strategy and practices and d) impact of economic scenarios on policyholder behavior. The range of scenarios tested (e.g via deterministic or stochastic modelling) will enable the market risk for Type B risks to be determined.
- 6.5 The modelling process to determe the market risk of insurers may differ from that employed by the banks in a number of ways. Some of these differences are shown in the table that follows.

Traditional Banking

- Recipe approach
- Detailed single risk (silo) models
- Risk neutral (pricing)
- Preference for analytic forms
- Variance reduction
- Accurate (within narrow scope)
- Calibrates to market (volatility)

Traditional Insurance

- Global in scope
- Generalized, multiple risks
- Real world (cash flow)
- Preference for "moving parts"
- Monte Carlo simulation
- No objective market benchmark
- Complex calibration & estimation

D.6.2 Replicating Portfolios

- 6.6 The general approach to determining market risk requires the modelling of the reinvestment of the relevant cash flows in accordance with the insurer's investment policies and practices over an appropriate time horizon, using a range of economic scenarios to a high degree of confidence.
- 6.7 For cash flows whose duration does not extend beyond the replicating portfolio horizon (i.e., the longest duration, publicly available, debt instruments), the appropriate time horizon (as stated above) for modelling investment management behavior is one year. This is the Type A aspect of market risk.
- 6.8 For cash flows whose duration extends beyond the replicating portfolio horizon (primarily some types of insurance liabilities), the appropriate time horizon for modelling investment management behavior is the entire duration of those future cash flows. These cash flows are subject to both Type A and B aspects of market risk.
- 6.9 The difference between market risk determinations for general market interest rate risk for two sets of future cash flows, one slightly shorter than the replicating portfolio horizon and the other slightly longer, will be minimized the more accurately the investment practices of the insurer can be modelled.
- 6.10 In principle, the replicating portfolio generates cash flows that 'replicate' (i.e. coincide with) the annual liability cash flows in each individual future year. Therefore, the replicating portfolio provides a perfect 'hedge' against the liability risks.
- 6.11 Obviously, this is a theoretical concept. Liability cash flows are subject to several types of risks (e.g. mortality risks) that cannot be hedged by financial instruments. Therefore, the following definition of the replicating portfolio is proposed:

The replicating portfolio (only) replicates the liability cash flows that are ('risk'-) adjusted for the systematic nonfinancial risks, while volatility due to diversifiable non-financial risks (e.g. volatility risk as a consequence of mortality) is fully ignored.

6.12 Consequently, the replicating portfolio should provide a <u>full</u> hedge against the <u>financial</u> risks that may affect future insurance liability cash flows before the replicating portfolio horizon.

D.6.3 Embedded Options

- 6.13 The replicating portfolio (i.e., the asset portfolio used to represent the future cash flows, should include specific financial instruments that provide a full hedge against (financial) 'embedded options' like minimum investment return guarantees related to profit sharing (if offered by the insurer).
- 6.14 Guarantees <u>always</u> offer additional value to the policyholders, since they indicate, implicitly or explicitly, that certain risks are transferred to the insurer. Therefore, they always increase the market value of the liabilities. Theoretically, the market value of these guarantees is equal to the market value of the financial instruments that are necessary to hedge these guarantees.
- 6.15 As these instruments are generally specific types of options or, if the guarantees also apply to future premiums, swaptions, their market value can generally be approximated by applying calibrated Black-Scholes types of option-price formulas; see e.g. Bouwknegt and Pelsser (2002) regarding annual minimum investment return guarantees for traditional Dutch regular premium business with profits, and Nonnenmacher and Russ (1997) for rather complex minimum investment return guarantees ¹⁶. If so, it will also be possible to measure the sensitivity of these market values to changes in asset yields. Therefore, including these

¹⁶ Alternatively, a so-called deflator approach may be useful (see e.g. Jarvis *et al.*, 2001). However, this methodology is still very much under development.

instruments in the replicating portfolio allows for the sensitivity of the total market value of the replicating portfolio with the sensitivity of the future cash flow stream being measured.

6.16 One final consideration/note is that many contracts also contain embedded options which can be exercised by the insurance company. These options will then, obviously, always reduce the market value of the liability.

D.6.4 Incompleteness of the Capital Market

- 6.17 Unfortunately, investment return guarantees in life insurance products are often complex. As a consequence, financial instruments to hedge the corresponding risks are generally not amply available. These instruments may even be non-existent in practice. Nevertheless, it may still be possible to approximate their market values by applying option-pricing theory. Alternatively, their market values may be approximated through stochastic simulation using a combination of currently available financial instruments.
- 6.18 In some cases, insurers have only expressed the intention, not the guarantee, to cover certain risks or to provide a certain minimum level of profit sharing. For example, some life insurance benefits are 'conditionally' indexed for price or wage inflation. Some performance-linked with profits business may offer positive bonus rates if the financial condition of the company, as assessed by management, allows for the extra pay-outs. Such embedded options have a positive value to policyholders. In some cases policyholders' expectations in this regard may be granted in court even if the conditions for their granting are not satisfied¹⁷.
- 6.19 Some life insurance liabilities may extend more than 30, possibly even 80, years into the future. This is much longer than the longest term of fixed-interest securities purchasable in the capital market (generally somewhere between 20 and 30 years for mature and developed investment markets). In these cases the insurer faces non-avoidable (systematic) reinvestment risks in the long term (i.e., Type B aspect of market risk). The present value of these liability cash flows far into the future can always be determined through modelling of the reinvestment policies and practices of the insurer in to the future using currently available financial instruments.

D.6.5 Economic Scenarios

6.20 In developing appropriate economic scenarios the following desirable characteristics of the constructed scenarios are noteworthy:

Interest rates

- Nominal yields must remain positive and not increase indefinitely
- Are subject to mean reversion but the reversion target is not constant
- Rate volatility decreases with maturity
- Higher volatility occurs with higher rates
- High correlation between maturities
- Distinctive yield curve shapes

Equity returns

- Negative skewness
- Fat tails over short periods
- Volatility clustering
- Exogenous shocks
- Markov property; only the current state is important
- Market correlations increase under extreme conditions

¹⁷ The Dutch insurance supervisor (PVK) has described such insurance liabilities recently as 'soft' liabilities. A possible way to handle them may be to assess them in a less quantitative and more qualitative way within the second pillar of supervision (the 'supervisory review process').

- Price appreciation versus dividend income

Inflation

- Non-persistence of extremely high or low (negative) inflation
- Realized may equal expected plus exogenous shock
- Mean reversion but target does not appear to be constant
- Volatility clustering
- Various forms of inflation
- Relationship to other economic factors

D.6.6 Discount Rates

- 6.21 The market value of a replicating portfolio can be determined by discounting their cash flows using appropriate discount rates. Assuming these cash flows correspond with the liability cash flows that are adjusted for the systematic non-financial risks, and ignoring the diversifiable non-financial risks as advocated before in section 3, the discount rates can be set equal to the actual risk-free spot yields. This approach implicitly provides for the specific risk of the issuer of the cash flows and allows the liquidity premia preferences in market yields to emerge over the life of the cash flows. Readers of this report should note that widespread market discussion on the proper allowance for these two aspects of market yields is on-going.
- 6.22 The use of different spot yields by different insurance companies should be avoided. It may be prudent for national insurance supervisors to prescribe the levels of the risk-free spotyields to be used for discounting the replicating asset cash flows within the process of determining solvency requirements. Of course, this requires an adequate procedure for estimating periodically the actual risk-free spotyield curve. For this, several methods are available. We mention the specifications that were proposed by Nelson and Siegel (1987) and Svensson (1994, 1995). For instance, the Nelson-Siegel approach implies estimating the following (non-linear) specification:

$$r_t^{\text{spot}} = \beta_0 + (\beta_1 + \beta_2) * \frac{1 - \exp(-\frac{t}{\tau})}{\frac{t}{\tau}} - \beta_2 * \exp(-\frac{t}{\tau})$$

- 6.23 The parameters to be estimated are β_0 , β_1 , β_2 and τ . Nice characteristics of this specification are:
 - the specification is reasonably parsimonious
 - the spotyield for the very short duration is equal to $\beta_0 + \beta_1$
 - the estimated spotyields for the long term converge to β_0 .
- 6.24 Alternatively, the so-called splines methodology is also broadly applied in practice, particularly by central banks and asset management departments of banks and (larger) insurance companies. See Anderson & Sleath (2001) for a recent comparison and assessment of the Nelson-Siegel-type and splines-type methods.

D.7 Standardized Approaches - Type A Risks

- 7.1 This section outlines standardized approaches to be used in determining a Pillar 1 capital requirement for Type A market risks. Type A risk may be present in any of the cash flow generating assets and liabilities of an insurer.
- 7.2 Market risk should include provision for both specific risk (e.g., perhaps as implied by the credit spread inherent in the yield of securities offered by the issuer) and general market risk. (e.g., general sensitivity to future rates of return).

7.3 As described earlier in section 5, Type A risk can be determined using an advanced approach by modelling cash flows over a broad range of economic scenarios using stochastic modelling with a one year time horizon and a high (e.g., 99% CTE) confidence level. This section outlines some standardized approaches which may be considered as approximations for measuring market risk. The appropriateness of these approximations will be highly dependent on local country circumstances and the specific risk profile of the insurer.

D.7.1 Methodology

- 7.4 The essential ingredients required to assess Type A market risk are,
 - Projected future cash flows
 - Nature of embedded options
 - Time horizon
 - Confidence level
 - Current economic scenario
 - Series of adverse scenarios
- 7.5 Approximations can be made with respect to these ingredients to simplify Type A risk determination. The result is a range of standardized approaches from the most elemental to approaches which closely compare to the advanced approach.
- 7.6 One such approximation might use option adjusted durations to represent the price sensitivity of cash flows, the current market value of future cash flows and a set of investment return shocks. The shocks would need to be designed to reflect the time horizon and confidence level desired as well as the possible pattern of adverse scenarios. In this regard, it may be desireable to recognize the more active investment management conducted on closely managed blocks of business (i.e., when the active management holding period is less than the standard one year time horizon).
- 7.7 Another approximation might require the grouping of future cash flows into various term "buckets" (BIS uses the term "maturity method"). The sum of the cash flows in these "buckets" would be multiplied by factors to produce the capital requirement. These factors would, in theory represent a combination of the above basic ingredients (i.e., time value of money from current economic scenario, adverse shock for desired confidence level and time horizon etc.). This type of approach is currently used by the BIS in their standardized approach for banks.
- 7.8 A very simple approximation (which depends heavily on broad decisions about the industry's generalized exposure to Type A risk) is to simply multiply the balance sheet value of insurer assets and liabilities by a table of factors reflecting the presumed presence and size of Type A risk.
- 7.9 The relative merits of each type of approximation need to be viewed by the supervisor in light of local conditions, expertise and inherent industry risk. Objectivity and ease of calculation need to be balanced with greater accuracy, complexity and the overall impact of the method chosen on the management of market risk by insurers and the types of products that are offered in the market place.
- 7.10 To develop standardized approaches for market risks (or other risk for that matter) requires judgement and supervisory tradeoffs depending on the supervisors choice of approximation and its method of application. Ideally, the conservatism inherent in a standardized approach should incent insurers, as they are able, to use more advanced methods in the future. One possible concern in designing approaches which allow judgement to be used by the insurer (e.g., if the degree of market risk is subject to the asset allocation practices of the insurer) is that the results will be less transparent since there may be opportunities for the insurer to 'manipulate' the resulting solvency requirement. It is important for the supervisor to consider in advance the possibilities and significance of such self-selection. For example, the concern surrounding asset

allocation "games" can be addressed directly through a requirement that asset allocation for purposes of the capital requirement must coincide with the insurer's management of their business.

- 7.11 Particularly in life insurance, some market risk from the total asset portfolio may be transferred to policyholders. This is generally the case in Universal Life business and many forms of adjustable and "with profits" business. Clearly, such assets and the corresponding liabilities should be closely matched (ignoring the non-financial diversifiable risks that may affect these liabilities) and the degree of such sharing of market risk needs to be reflected in the chosen standardized approach.
- 7.12 The following sub-sections outline some important aspects in selecting a standardized approach for certain sources of market risk as well a possible treatment of dependencies.

D.7.2 Fixed Interest Securities and Liabilities

- 7.13 The risk of fixed-income investments depends on some properties of these investments. The relevant properties are duration (the sensitivity against an interest rate increase) and rating (which matters for assessing the credit risk). Aside from ordinary bonds, there are mortgage-backed and asset-backed securities, which behave similarly, except for prepayments in a period of falling interest rates. Bonds denominated in a foreign currency are affected by the foreign exchange (FX) risk.
- 7.14 The market risk for fixed income investments is dominated by the risk of increasing interest rates. When the relevant interest rates (or the whole yield curve) increase by one percent, the value of a bond (portfolio) decreases by the amount of duration times 1%. The duration can either be exactly computed from the cash flows of the bond and the current zero-coupon yield curve, or it can be approximately assessed as 80% of the mean time to maturity. *Example*: a bond with a time to maturity of 10 years will lose about 8% of its value when the interest rate level increases by 1%.
- 7.15 The classical standardized approach to calculating a mismatch position is to employ a Macaulay duration analysis. This approach has a number of drawbacks. We mention three of them:
 - a. The duration approach as described is based on a first-order Taylor approximation of the interest sensitivity of the present value. This approximation is not very good for larger interest changes. A better approximation is possible by including the second-order term, i.e. the so-called convexity.
 - b. More importantly, the duration approach assumes a parallel shift of the spot yield curve, while non-parallel shifts are equally possible, and possibly even more 'dangerous' for the company. Non-parallel shifts can be taken into account by applying the approach for some duration bands individually and summing the results. Such an alternative approach can also be considered as an approach that allows for correlations between the changes of the 'average' spot yields per duration band that are less than one.
 - c. Still requires a fair degree of complex modelling by the company.
- 7.16 To assess market risk, requires the probability distribution of interest rate changes over a time horizon. This can be done through a statistical analysis of empirical economic data. The variance of interest rate changes is slightly higher for short maturities than for long ones, and higher for currencies with a high interest rate level than for low-interest currencies.

As a very rough estimate for major currencies, the standard deviation of yearly interest rate changes is of about 1.25%. Thus we obtain an approximate standard deviation of the yearly value change:

$$\sigma_{\textit{bond}} \approx \frac{\textit{meanTimeToMaturity}}{100} \times \textit{assetValue}$$

- 7.17 If this approximation is used instead of a detailed statistical calculation, it should be loaded with a prudent factor. The formula can be applied to whole portfolios, not only individual bonds, as the risk reduction due to diversification between bonds is rather small. When aggregating bond portfolios, we add σ_{bond} values rather than σ_{bond}^2 values (which would apply if bond returns were independent).
- 7.18 Changes in bond yields may be caused by changes in the underlying risk-free rates, changes in the spreads that reflect the liquidity risk and credit risk of the asset, or changes in both components simultaneously. In section 3.4 we already suggested that the replicating asset portfolio (i.e. the liability cash flows) should be valued by discounting its cash flows on the basis of the risk-free spot yields. Consequently, changes in spreads only affect the market value of the actual assets available, while changes in risk-free rates affect both the market value of the assets available and the market value of the replicating portfolio (liabilities). It may be more logical to consider changes of spreads as typical forms of credit risk.
- 7.19 If a bond is denominated in a foreign currency, the volatility of the corresponding FX rate has to be accounted for. A typical yearly standard deviation for returns of a freely floating foreign exchange rate is around 10%. Thus we obtain

$$\sigma_{FX} \approx 0.1 \cdot assetValue$$

- 7.20 Again, this may be either used with a conservative factor or replaced by a statistical assessment.
- 7.21 The two risk components σ_{bond} and σ_{FX} can be combined as described in Section 3.4.1:

$$\sigma_{foreignBond} \approx \sqrt{\sigma_{bond}^2 + \sigma_{FX}^2} \approx \sqrt{\frac{meanTimeToMaturity^2}{100^2} + 0.01}$$

- 7.22 In this case, assuming zero correlation between the factors, is conservative. K. Froot ("Currency hedging over long horizons") and others have shown that foreign assets tend to have a lower variance than the formula indicates, especially in the long run.
- 7.23 The formulas for $\sigma_{foreignBond}$ and σ_{bond} can be used as pieces in a large, multivariate normal model. They describe the risk of stand-alone bond portfolios. However, in the case of assetliability matching, the true risk may be smaller. If the times to maturity match the expected times of claim payments, and the assets in foreign currencies match foreign liabilities, the total value of assets and liabilities may become more immune against market fluctuations. Of course, an insurance company has some invested surplus capital in excess of the expected liabilities, which has the full market risk. Exact calculations are only possible with a full ALM model.

D.7.3 Equity and Property

- 7.24 Equity and property positions are subject to Type A market risk when these assets are used to fund similarly performing policyholder liabilities (e.g., unit linked funds with no material guarantees) or represent free surplus. In these situations, market risk results from short term volatility in the market value of the underlying assets. The longest time horizon to be considered in this case (as discussed earlier) is one year. Shorter time horizons based on local products or conditions might be considered by local supervisors.
- 7.25 The variance of equity returns has been analyzed in numerous studies. The volatility (= annual standard deviation) is higher than for bonds. Even for the best diversified portfolios as

represented by index-tracking portfolios, the standard deviation of yearly returns may easily be 20% of the asset value. For individual equities of reasonable quality, it may be about 30%. Some individual equity titles may have distinctly higher risks. These risks have to be quantified, based on empirical data.

7.26 If equity is denominated in foreign currency, the standard deviation is

$$\sigma_{\text{foreignEquity}} \approx \sqrt{\sigma_{\text{equity}}^2 + \sigma_{FX}^2}$$

- 7.27 As discussed for fixed income, this is a conservative formula. Foreign equity investments often have a standard deviation of returns lower than this, mainly in the long run.
- 7.28 When aggregating equity investments of different currency zones, we should add their standard deviations, assuming total dependence, rather that adding the squares (assuming independence). This conservative assumption may be refined by a detailed analysis of correlations between equity indices of different countries.
- 7.29 Real estate investments can exactly be treated as equity. Real estate indices take the role of equity indices. The diversification between different countries may be slightly stronger than the analogous diversification effect for equity.
- 7.30 Real estate prices tend to increase when mortgages are becoming cheap, i.e. when interest rates fall.

D.7.4 Derivatives and Embedded Options

- 7.31 In sections 3.1 and 3.2 we already stressed the need to value embedded options explicitly. In particular, their value should be set equal to the actual market value of the assets needed to hedge these options. However, these assets may not be actually available. Therefore, in that case, special attention is needed for possible mismatches between the options that are embedded in liabilities and the derivative assets that are intended to cover them. The solvency requirement defined for this should be equal to a conservative estimate of the possible change of the difference between their market values. While these market values should always take the full remaining terms of the contracts into account, the mismatch buffer only needs to cover the possible change of its difference within the limited time period under consideration (one year).
- 7.32 Generally, calculating a mismatch provision for embedded options will not be an easy task. If it is possible to get a reasonable approximation of their actual market value, i.e. the market value of the replicating asset portfolio, by applying a (calibrated) Black-Scholes type of formula, it will generally also be possible to get a reasonably conservative estimate of its possible change. Such formulas generally have two types of parameters, namely the risk-free rate(s) and the implied volatility. For complex options, the market value of the embedded options can only be reasonably estimated by running stochastic simulations.

D.7.5 Other Types of Assets

- 7.33 Asset portfolios may contain many other types of assets. Some of them may even be off-balance sheet items. Typical examples are investments in private equity, commodities and all kind of derivatives that are not intended to hedge options embedded in the liabilities. As with equity and property investments, the relating market risks are (generally) 'asset-only' risks. Therefore, the corresponding mismatch provision can be calculated similar to the way it is calculated for equity and property investments.
- 7.34 Some of these assets may only be available 'over-the-counter' and are hence, illiquid. In this situation, both their actual market values and the possible change of these values within the limited time period (one year) have to be estimated conservatively.

D.7.6 Currency Risk

7.35 Currency risk is important if not all assets and liabilities are denominated in the same currency. A solvency requirement for currency risk can be defined in a similar way as for equity and property risks (i.e., by setting it equal to the actual market value of the assets denominated in foreign currency times a conservative estimate of the potential change of value within the first next year). The 'potential change' factor can include the effects of both the potential change of the yields (/prices) and the potential change of the currency.

D.7.7 Dependencies

- 7.36 Dependencies between asset market prices/yields of different asset types, particularly fixedinterest, equity and property (but excluding derivatives) are generally low. Correlations between prices/yields/returns of assets in local currency and those of assets that are denominated in foreign currency may be anything between -1 and +1, depending on the global and local economic conditions, the type of asset and the specifics of the assets (industry). It may therefore be reasonable to assume zero correlation between all these asset types in a factor-based approach. Consequently, the total solvency requirement for market risks can be set equal to the square root of the sum of squared requirements for these individual asset classes.
- 7.37 Of course, market prices of derivatives, including those that hedge options that are embedded in the liabilities are closely linked to the market prices of the underlying assets. Therefore, as mentioned before in section 5.2.3, it is very important to have consistency between the approaches for the 'leading' assets and the derivatives. In particular, if the approach for leading assets is based on an assumed change of the price/yield, the same change should be assumed in determining the change of the value of the derivatives. The resulting solvency requirement can be aggregated into the total requirement by simply adding it to the total defined in the foregoing paragraph.
- 7.38 Correlations within individual categories are generally high. Implicitly, this is taken into account by defining and summing different solvency requirements for different asset categories, instead of defining and summing them for individual assets. Any 'extra' correlations due to possible concentration within categories, e.g. many investments in shares of the IT-industry, can be 'penalised' by adding solvency requirements for concentration risks.
- 7.39 However, within the category of fixed-interest securities, special attention is needed for correlations between spot yields for different durations (maturities), if the factor-based approach for fixed-interest securities is applied to individual duration bands independently (see also section 5.2.1). In that case a choice has to be made for the way the corresponding solvency requirements are combined into one requirement for all fixed-interest securities (better: S^(fix)). This issue is

closely linked to the correlations issue. Spot yields for different durations are generally highly, but not perfectly, correlated. Therefore, the actual spot yield curve may also show non-parallel shifts. The following approach per duration band allows for such shifts:

- 1. Select a number of (modified) duration bands, e.g. 0-2 years, 2-5 years, 5-8 years, 8-12 years, 12-16 years, 16-24 years, and more than 24 years, with corresponding 'median' durations dur⁽ⁱ⁾ (dur⁽¹⁾ = 1, dur⁽²⁾ = 3.5, dur⁽³⁾ = 6.5, ..., dur⁽⁷⁾ = say 28) and corresponding actual (risk-free) spot yields (r⁽¹⁾, r⁽²⁾,) according to the actual risk-free spot yield curve.
- 2. Define 'maximum' potential absolute changes of spot yields that may occur within the first next year, for each of the individual spot yields individually ($\Delta r^{(1)}, \Delta r^{(2)}, \ldots$). Preferably, these are based on an analysis of historical changes for each of the spot yields individually.
- 3. Allocate the cash flows of the available fixed-interest securities and liabilities respectively to the different duration bands, calculate the actual market values as well as their balance per duration band ($S^{(fix)(1)}, S^{(fix)(2)},)$ and define the solvency requirement for each duration band i as $Solv^{(fix)(i)} = ABS \{S^{(fix)(i)} * dur^{(i)} * \Delta r^{(i)}\}.$
- 4. Finally, define the total solvency requirement for fixed interest securities (balanced with the liabilities) as the sum of the requirements for the individual duration bands: $Solv^{(fix)} = \sum_{i} Solv^{(fix)(i)}$
- 7.40 This way, implicitly, it is assumed that each of the individual spot yields may either rise or fall within the next year. In this respect zero correlation between individual spot yields is assumed. Therefore, the final outcome of this approach may be higher than the outcome based on a rise or fall of all spot yields at the same time (by $(\Delta r^{(1)}, \Delta r^{(2)},)$ or $(-\Delta r^{(1)}, -\Delta r^{(2)},)$ respectively), as it allows for non-parallel shifts. However, by simply summing the resulting individual solvency requirements we implicitly assume correlations to be equal to one.
- 7.41 Finally, this approach can be considered as a mix of duration matching and cash flow matching. The more different duration bands are distinguished, the more it will stimulate insurers to do actual cash flow matching.

D.8 Standardized Approaches - Type B Risks

- 8.1 By definition the development of standardized approaches for capturing Type B risks is fraught with difficulty. Where these risks are material in an insurer, the supervisor should encourage or even require the insurer to perform appropriate advanced approaches to modelling their Type B market risk.
- 8.2 Standardized approaches to assessing Type B market risk might include:
 - 1. For long term interest guarantees in life insurance and annuity products the present value of future liability cash flows must be determined on the presumption that long term reinvestment returns revert to a conservative view of historical long term averages.
 - 2. For complex options, appropriately conservative factors must be derived based on rigorous stochastic modelling of industry wide data to adequately capture the tail of the loss distribution for the confidence level required.

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APPENDIX E Credit Risk

E.1 Definition of Credit Risk

- 1.1 Credit risk is the inability or unwillingness of a counterparty to fully meet its on and/or offbalance sheet contractual financial obligations. The counterparty could be an issuer, a debtor, a borrower, a broker, a policyholder, a reinsurer or a guarantor
- 1.2 Credit risk has been traditionally associated with assets. However, it can exist with respect to any set of projected future cash flows. Credit risk is therefore also important in assessing the true relief provided by a counterparty to an insurance transaction, such as reinsurance or a party to whom the insurer has outsourced some of its work functions. Credit risk might even be considered to exist in regard to the projected future cash flows resulting from the policyholder obligations. This latter aspect of credit risk is quite controversial as it suggests the value of policyholder obligations diminishes as the credit risk of the insurer declines. The WP recommends that insurer capital requirements for credit risk do not reflect the potential ability of the insurer to default on it own cash flows.
- 1.3 Credit risk can be reflected in the present value of a set of cash flows either implicitly via a credit risk spread incorporated in the discount rate or via explicit modelling of the cash flows themselves.
- 1.4 The market value of a stream of projected future cash flows (e.g., a bond) reflects the current market view (among many things) of the credit risk of the provider of the cash flows. Such a view might reflect a variety of market knowledge of the bond issuer such as credit ratings provided by various agencies. Necessarily, such a view will likely reflect the current financial position of the issuer as well as the current economic environment. Such a view will consider the possibility of the issuer slipping in its ratings (i.e., ability to pay) as well as the probability of default (PD) and the amount of loss given that default occurs (LGD).
- 1.5 The Bank for International Settlements (BIS) defines the capital requirements for banks. In particular, its April 2003 consultative document entitled "The New Basel Capital Accord" contains extensive materials related to the determination of credit risk capital requirements, including both standardized and advanced approaches. The WP recommends that similar approaches be used for insurers. The WP recommends that the BIS approach may require some modification to address insurer specific issues. These modifications are noted throughout this portion of the WP report.

E.2 Types of Credit Risk

- 2.1 The principal sources of credit risk are:
 - Direct Default Risk: risk that a firm will not receive the cash flows or assets to which it is entitled because a party with which the firm has a bilateral contract defaults on one or more obligations.
 - Downgrade or Migration Risk: risk that changes in the possibility of a future default by an obligor will adversely affect the present value of the contract with the obligor today.
 - Indirect Credit or Spread Risk: risk due to market perception of increased risk (i.e., perhaps due to business cycle or perceived credit worthiness in relation to other market participants).
 - Settlement Risk: risk arising from the lag between the value and settlement dates of securities transactions.

- Sovereign Risk: risk of exposure to losses due to the decreasing value of foreign assets or increase the value of obligations denominated in foreign currencies.
- Concentration Risk: risk of increased exposure to losses due to concentration of investments in a geographical area or other economic sector.
- Counterparty Risk: risk of changes in values of reinsurance, contingent assets and liabilities (i.e., such as swaps that are not otherwise reflected in the balance sheet).
- 2.2 In general, life and health insurers purchase assets to support their liabilities. Historically this has not been true for non-life insurers where there has been a tendency for insurers to manage separately the results from underwriting and investments. While all of the assets of an insurer are available to provide against adversity, it is common risk management practice for insurers to implicitly or explicitly allocate their assets for one of the following purposes:
 - support insurance contract liabilities
 - represent economic capital
 - represent free surplus
- 2.3 The allocation of assets to support specific policy liabilities is especially important for those insurance products whose performance depends directly on the performance of the underlying assets. In situations where the asset performance (including the impact of credit risk) is shared directly or indirectly with the policyholder, then appropriate credit can be taken in the determination of the credit risk capital requirement. Such credit must take into account policyholders' reasonable expectations in this regard as well as the insurer's practices in sharing such experience with policyholders.
- 2.4 Sizeable portions of an insurer's liabilities can have durations comparable to readily available high quality liquid assets in the local market. In these situations it is possible to select assets whose cash flows can provide a very close match to the liability cash flows. In other words, a replicating portfolio of assets is available in the market. In this situation, credit risk focuses on the actual assets held and the ability of the insurer to manage its credit loss position within the replicating portfolio horizon. This type of credit risk will be called **Type A** risk.
- 2.5 The long-term duration of some insurance (especially life insurance) liabilities requires the consideration of long term reinvestment of existing assets since a replicating portfolio assets of sufficient duration may not be currently offered in the market. For this type of business appropriate account must be taken not only of credit risk in current assets (Type A credit risk) but also the credit risk involved with future reinvested assets as well. This latter aspect of credit risk will be called **Type B** risk. Assessing Type B credit risk entails considerable uncertainty about the composition of the replicating portfolio and the manner of its reinvestment to mature the underlying cash flows. The length of the reinvestment period may extend through several economic periods.

E.3 Key Drivers of Credit Risk

- 3.1 Some of the key drivers of credit risk include¹⁸
 - Credit quality Credit quality of an investment or an enterprise refers to the probability that the issuer will meet all contractual obligations. This assessment normally occurs at both the initial investment and at each renewal point. One of the common measurements used in assessing credit quality is the rating assigned to the issuer. A variety of ratings agencies

¹⁸ Canadian Institute of Actuaries, 2003 Report of the CIA Sub-Committee on Credit Risk

Online at http://www.actuaries.ca/publications/2003/203087e.pdf (English), http://www.actuaries.ca/publications/2003/203087f.pdf (French)

provide these assessments to the public, giving the investor a perceived level of confidence in the issuer's ability to make good on the repayment schedules to which it is committed.

- Maturity The longer the term to maturity of an investment, the longer even a high quality issuer has to potentially deteriorate
- Concentration by industry Conditions that trigger credit events have a tendency to impact on the entire economy simultaneously. Within this general characteristic, however, the impact of economic development often varies between sectors of the economy. Within a sector, however, there tends to be uniformity between the entities participating in that sector. Degrees of separation within a sector will exist, but these are on a smaller scale than those that normally occur between sectors.
- Concentration by geography Credit risk has been shown to carry a large degree of contagion. Periods of relatively few credit events are followed by periods where default experience is extremely high. Similarly, economically depressed regions tend to produce high levels of default experience in comparison with more prosperous areas. That these regions can and do change over time creates a challenge to the process of credit risk analysis
- Size of expected loss The size of loss due to a credit event can vary widely, from loss of some or all of the return on an investment to loss of some, or all, of the inherent principal. Losses can also occur from a delay in the timing of a scheduled payment, causing either a loss of return during the deferral period, a reduction in available reinvestment rate during the deferral period, or both. When a scheduled payment is delayed for any reason, there is also the potential for an associated loss if the payment were needed to match a scheduled outflow. The investor would then be required to make good on its obligation by borrowing or selling other assets. They might need to delay payment of their own scheduled obligation, possibly incurring a penalty.

E.4 Controls and Hedging Strategies

- 4.1 Important in the management of credit risk are a combination of sound underwriting practices and appropriate lending limits within the insurer.
- 4.2 A broad definition of hedging strategies used to offset credit risk would include
 - letters of credit
 - contingency deposits
 - securitization of mortgages (Mortgage Backed Securities)
 - securitization of other assets (Asset Backed Securities)
 - credit derivatives
 - credit default swaps
 - total return swaps
 - collateralized debt obligations (CDOs)
 - credit-linked notes
 - credit spread options
 - basket derivatives
- 4.3 Investment performance features of some insurance products also permit some, or all (policyholder reasonable expectations may at issue), of the credit losses for assets deemed to be used to support the policyholder obligations of specific blocks of insurance products.

E.5 General Modelling Approaches

- 5.1 There are a number of generalized approaches that are used to model credit risk¹⁹. A few of them will be summarized in the following paragraphs.
- 5.2 In default models, the rates of default and recovery are modelled explicitly. Present values are taken using the risk-free interest rate curve, and different cash flows under assumptions of default or non-default are valued using probabilities.
- 5.3 For example, assume a \$100 cash flow is expected in one year from XYZ Corporation. Their probability of default is known to be p, and recovery on default is expected to be R. The risk-free one-year rate is i. Then the current value of the cash flow is

100 (1-p) / (1+i) + 100 p R / (1+i)

- 5.4 Estimates of R are very difficult, and so it is usually set to a constant around 40% to 50%, based on experience. Even most stochastic models take this approach. Values of p can be found for given credit ratings from the various credit rating agencies, and the combination of p and R can be compared to the spread of the corporation's bonds for reasonableness.
- 5.5 In default models there are two states considered, either in default or not in default. Credit migration models consider not only the risk of default, but also the risk that an investment will lose (or gain) value due to changes in the corporation's credit rating. For example, if you hold a bond rated AA and it is downgraded to A, the bond will lose value, since it will be less desirable to potential buyers. Central to all credit migration models is a matrix of values known as a transition matrix. The matrix contains the probability that a bond will change from its current credit rating to another credit rating.
- 5.6 Asset models were developed in the 1970's by Merton. The general concept is that a firm will go into default if the value of its assets becomes less than the value of its debts, and so the firm's debt can be modelled as an option against its assets. The basic approach developed by Merton has been considerably expanded since its initial introduction.
- 5.7 An asset model can be combined with a model of correlations between obligors to produce a portfolio-level risk management model. For example, correlations between different obligors' underlying asset values are sometimes estimated by reference to correlations between stock prices. This approach underlies a number of commercially available credit risk models.

E.6 Degree of Protection

6.1 The credit risk capital requirements should be determined in a manner consistent with the overall goal for the degree of protection (confidence level) inherent in Pillar I capital requirements.

E.7 Time Horizon

7.1 Consistent with the time horizon for other insurer risks, credit risk should generally be determined using a time horizon of one year. One year recognizes the generally less active trading environment of insurers with respect to their asset and liability cash flows. One year reflects a conservative view of the time required by a supervisor to assume control of the affairs of a weakened insurer. One year reflects a conservative view of the time required for an insurer to address the credit risk in its assets. Failure to actively manage credit risk within such a portfolio within one year is more appropriately the subject of Pillar II type supervisory measures.

¹⁹ Recommended reading includes a paper from the Australian Institute of Actuaries, 2003 *Capital Reserving for Credit Risk for Insurers (Life & GI) and Other Institutions*. Online at <u>http://www.actuaries.asn.au</u>

7.2 This assessment time horizon should not be confused with the need to consider, in such an assessment, the full term of all of the assets and obligations of the insurer. For example, Type B credit risk requires consideration of future reinvestment decisions and future economic scenarios for the full term of the obligations of the insurer. Credit risk for these liabilities involves systematic (undiversifiable) risk due to the limited availability of (parts of) the replicating asset portfolio or, at least, uncertainty about its composition. In theory, these risks must always be assessed for the full remaining term of the liabilities. The best fitting replicating portfolio assets must be reinvested in accordance with the insurer's policies and practices with respect to investments so as to provide for the lengthy future cash flows. The requirement of a full term time horizon is considered necessary due to the considerable uncertainties involved in providing for future cash flows beyond the term of currently available replicating portfolio assets.

E.8 Advanced Approach – Type A Risks

- 8.1 The BIS has developed considerable experience with respect to credit risk capital requirements in the banking sector. The WP believes that a similar approach should also be considered for use by insurers in capturing Type A credit risk.
- 8.2 In considering the applicability of the BIS approach, insurance supervisors will need to consider the appropriateness of several elements in the BIS approach. For example,
 - Degree of protection the WP recommends consistency throughout the Pillar I requirements
 - Time horizon the WP recommends consistency throughout the Pillar I requirements
 - Diversification the WP recommends insurers reflect the diversification in their portfolios
 - Correlation the WP recommends that consideration be given to allowing insurers to reflect their own asset correlations
 - Cycles –the WP believes the use of "current" versus "through the cycle" distributions for the frequency and severity of default the WP believes this issue requires further study
 - Migration the WP supports the use of credit migration techniques (non-absorbing hitting probabilities for rating migration events) in the framework

A General Approach

- 8.3 The following paragraphs outline a general approach to the modelling of Type A credit risk.
- 8.4 Corporate bonds involve credit risk. The value of such a bond shrinks if the rating of the issuing company falls. This is the downgrade risk or, more generally formulated, the credit spread risk. The most extreme case is default. Expected default probabilities are available from rating agencies.
- 8.5 There are several commercially available software products to assist in the modelling of credit risk. Some of these focus on default modelling only while others also include credit spread modelling as well. One product explicitly models transition probabilities between ratings, where the lowest level, the default, is an absorbing state.
- 8.6 A supervisory credit risk assessment guideline should be designed in way not to demand the use of commercial software packages or services. The proposed guideline should provide a simple formula that is compatible to the multivariate normal framework of the base-line approach. One such formula is proposed here.
- 8.7 In this simple credit risk model, a bond is essentially characterized by its mean time to payment T and the current yearly default probability p_1 of the issuer. For rating BBB, for example, a typical yearly default probability is $p_1 = 0.2\%$. For assessing credit risk, we neglect the many

small cash flows due to coupon payments and assume just one large cash flow, the principal payment, at time now +T. The theoretical value of such a bond is

assetValue $\approx (1 - p_T) \cdot principal$

where p_T is the default probability for the whole time period T. For the same period, the variance of the value change due to credit risk can be computed as

 $\sigma_{credit}^2(T) \approx p_T \cdot assetValue^2$

- 8.8 The distribution function is binomial and has a form that is very different from normal. Another conservative assumption is that the corporate bond has a zero value after a default whereas, in reality, a small part of the face value may be recovered.
- 8.9 Our time horizon is 1 year, so we need the return variance $\sigma_{credit}^2 = \sigma_{credit}^2 (1year)$ due to credit risk, rather than just $\sigma_{credit}^2(T)$. This variance σ_{credit}^2 is affected not only by defaults but also by fluctuations in the rating of the issuer during the maturity period. A default-only model underestimates the variance. Rating fluctuations have to be included to arrive at estimated standard deviations that are large enough.
- 8.10 The model just assumes two things:
 - (1) There is a rating scale on which the rating fluctuation can be described as a Brownian motion in a sufficiently good approximation.
 - (2) There is a minimum value on this scale that corresponds to a default and serves as an absorbing state of the Brownian motion.
- 8.11 All the rest of the model can be derived from these two assumptions. The theoretical hitting probability of the absorbing state within a time interval T is

$$p_T = 1 - \Phi\left(\frac{const}{\sqrt{T}}\right)$$

where $\Phi(.) = 2N(.) - 1$ and N(.) is the cumulative standard normal distribution with unit variance. The constant depends on the initial rating, but does not matter here.

8.12 Now we can relate default probabilities for different time intervals:

$$p_T = 1 - \Phi\left[\sqrt{\frac{1 y ear}{T}} \Phi^{-1} (1 - p_1)\right]$$

where Φ^{-1} is the inverse function of Φ , with $\Phi^{-1}[\Phi(p)] = p$. Given an annual default probability p_1 , this formula allows computing the default probability p_T of the same issuer over a time interval of size T, including the rating fluctuation effect.

8.13 The same model leads to an approximation formula for the yearly variance of returns due to credit risk:

$$\sigma_{credit}^{2} \approx \frac{1year}{T} p_{T} = \frac{1year}{T} \left\{ 1 - \Phi \left[\sqrt{\frac{1year}{T}} \Phi^{-1} (1-p_{1}) \right] \right\}$$

or, as a numerical approximation in closed form,

$$\sigma_{credit}^{2} \approx \frac{1}{T} \cdot e^{\frac{1}{b} \left\{ c^{2} - \left[\sqrt{\frac{1}{T} \frac{year}{T}} \left(\sqrt{c^{2} - b\log p_{1}} - c \right) + c \right]^{2} \right\}}$$

with b = 2.37 and c = 0.85. This formula quantifies the credit risk of a bond as a function of its mean time to payment, T, and the issuer's current annual default probability, p_1 .

- 8.14 As an example, we regard two BBB bonds. One has a remaining maturity of T = 1 year, the other bond has a maturity of T = 5 years. The issuer has a current annual default probability of $p_1 = 0.002 = 0.2\%$. Using the formula above, the 1-year bond has a credit risk of $\sigma_{credit} \approx \sqrt{0.002} \cdot assetValue \approx 4.5\% \cdot assetValue$. For the 5-year bond, we obtain a credit risk of $\sigma_{credit} \approx 18.3\% \cdot assetValue$. This higher value reflects the additional risk due to expected rating fluctuations over the 4 last years of the 5-year maturity period.
- 8.15 For a portfolio of different corporate bonds, there are diversification effects, which are limited by the fact that defaults may be correlated, depending on the geographical or economic proximity of the different issuers. In general, default frequencies also depend on worldwide economic cycles. In economically difficult times, many companies are subject to simultaneous downgrading or even default. There may be chain reactions in case of defaults. Statistics show that annual default frequencies exhibit a level of volatility distinctly higher than expected in a purely stochastic, Poisson-like world.
- 8.16 A simple, conservative model for the diversification is proposed. The credit risks $\sigma_{credit,i}$ of all bonds are computed with the formula presented above. The maximum risk, for full dependence, is

$$\sigma_{credit,\max}^2 = \left(\sum_i \sigma_{credit,i}\right)^2$$

8.17 In case of no dependence, we have

$$\sigma_{credit}^2 = \sum_i \sigma_{credit,i}^2$$

8.18 We conservatively assume that the best diversification can be approximated by correlation coefficients of 0.5. The resulting credit risk of a bond portfolio is

$$\sigma_{credit}^{2} = \frac{\alpha}{2} \sum_{i} \sigma_{credit,i}^{2} + \left(1 - \frac{\alpha}{2}\right) \left(\sum_{i} \sigma_{credit,i}\right)^{2}$$

where α is the estimated degree of diversification. Bonds from the same issuer have $\alpha = 0$, and an optimally diversified bond portfolio has $\alpha = 1$.

- 8.19 Sophisticated software products explicitly model the dependencies between defaults. Chain reactions in case of defaults may lead to a fat tail of the true overall credit risk.
- 8.20 Eventually, we combine market and credit risk of a fixed-income portfolio:

$$\sigma_{\rm fixedIncome} pprox \sqrt{\sigma_{\rm bond,market}^2 + \sigma_{\rm credit}^2}$$

assuming independence between bond markets on one hand and downgrades and defaults on the other hand. This assumption has to be checked and perhaps replaced be the more conservative assumption of a slightly positive correlation.

E.9 Advanced Approach – Type B Risks

- 9.1 Type B credit risk is inherent in insurance products of long duration (i.e. beyond the duration of current assets or replicating portfolio assets). Type A credit risk provisioning (e.g., as per the Basel Accord) only provides for the credit risk inherent in currently held assets.
- 9.2 If, in valuing the insurer's assets and liabilities in accordance with a total balance sheet approach, the future policy liability cash flows are present valued using investment returns which are net of credit risk, then the present value amount of the policy liabilities so determined will include a provision for credit risk for the entire term of the liabilities.
- 9.3 The present value amount of this credit risk provision can be estimated through determination of the credit spread inherent in future investment returns. Care must be exercised to avoid double-counting the credit risk provision for Type A credit risk in both the liabilities and via direct reference to the current assets. Care must also be exercised that an appropriate provision for Type B credit risk has been made. If the credit spread assumed in the future simply reflects expected losses or simply the current position in the credit cycle, then it may be insufficient for solvency purposes.

E.10 Standardized Approaches – Type A Risks

10.1 The Working Party (WP) recommends that the work of the BIS with respect to credit risk capital requirements for banks be also considered for use by insurers in capturing Type A credit risk. In considering the BIS approach, insurance supervisors will need to consider the appropriateness of the time horizon and confidence level assumptions implicit in the BIS approach. Also to be considered is the appropriate treatment of policyholder pass-through features.

E.11 Standardized Approaches - Type B Risks

- 11.1 By definition the development of standardized approaches for capturing Type B risks is fraught with difficulty. Where these risks are material in an insurer, the supervisor should encourage or even require the insurer to perform appropriate advanced approaches to modelling their Type B credit risk.
- 11.2 Standardized approaches to assessing Type B market risk might include (from the simplest to the more sophisticated):
 - 1. Where it is not possible to directly compute the present value of future liability cash flows, provision for Type B credit risk can be made approximately by applying a factor to the policy liabilities of long-term business. These factors would need to be tailored to the circumstances of an individual supervisor and their financial reporting structure for these liabilities.
 - 2. Where it is possible to estimate the duration of long term business, provision for Type B risk can be made approximately by applying a credit risk spread to the duration (beyond that of the current assets) and the policy liabilities for long-term business.
 - 3. Where it is possible to directly compute the present value of future liability cash flows, provision for Type B credit risk can be made directly through use of a credit risk spread.

APPENDIX F Lessons from Insurer Failures

F.1 Lessons from Recent Insurer Failures

1.1 There have been a number of high profile insurer failures in recent years. Before attempting to identify the characteristics of a workable international risk-based solvency approach, it is worthwhile to examine the reasons behind the failures, to the extent possible at this stage. This will help focus the needs of the risk-based measures more closely. The WP also notes the Sharma Report, available from the Conference of European Supervisors which provides an excellent summary of the lessons learned from European insurer failures.

F.1.1 HIH Insurance (Australia)

Background:

- 1.2 The HIH Insurance Group (HIH) was declared provisionally insolvent in March 2001. Following investigation by the provisional liquidator, insolvency was confirmed in August of the same year. The estimate of the deficit in assets to support the outstanding liabilities is still uncertain, but the shortfall, estimated to be between A\$3.5 billion and \$5.3 billion in August 2001, appears to be firming up at a figure towards the middle of that range
- 1.3 A Royal Commission was established to look into the reasons behind the failure. In April of 2003, the Royal Commissioner presented his report on the reasons behind the collapse and on recommendations to minimise the chance of future similar occurrences. His report focused on a failure by management to provide sufficiently for outstanding liabilities as the key reason for failure, compounded by "blind faith" in the leadership and an aggressive approach to growth. However, the report and the testimony from witnesses to the Commission provides a more detailed account, as follows.

Relevant Issues:

- 1.4 Firstly, HIH had a unique business spread. Its portfolios were predominately longer tailed and more risky than the market norm, despite more recent attempts to increase the shorter tailed business focus. The accompanying high volatility of outcomes accentuated the risk of failure.
- 1.5 HIH had been founded and led for many years by a strong-minded, goal-driven CEO. It emerged from the Royal Commission's investigations that, whereas in the earlier years of the company's history, this approach was very successful, the CEO's approach had contributed to more recent problems.
- 1.6 In 1999, HIH completed the take-over of another major Australian based general insurer, FAI Insurance. It has emerged that the price paid for FAI was substantially greater than the net asset value. Indeed, in hindsight there are strong indications that FAI was technically insolvent, at the time of take-over. No due diligence was performed as part of the take-over procedure.
- 1.7 The evidence presented to the Royal Commission on claim reserving and management practices, raised questions as to the level of objectivity applied and the level of prudence. HIH management argued that risk margins in setting outstanding claim reserves were made unnecessary by the company's outwards reinsurance program. This was shown to be a false security. Similarly, underwriting, risk pricing and premium setting practices came into question and in some areas were found to be deficient.

- 1.8 A number of connections between the company's external auditor and HIH were highlighted by the Commission. As an example, the company's CFO at the time of failure was previously a senior partner at the auditor as were several members of its board, including its Chairman. These connections caused questions to be asked about the level of independence, and hence effectiveness, of the auditor.
- 1.9 HIH was the major client of the external actuary who examined the long tailed claims portfolios. Fees from his work for the company represented the majority of his annual income. This put pressure on any statement regarding the actuary's level of independence.
- 1.10 The Royal Commission unearthed a substantial dearth of data for actuarial, accounting and underwriting studies. Any such lack of reliable data would inevitably have led to an increase in the level of subjectivity for key decisions.
- 1.11 In the final years of the company's life, it entered into "financial reinsurance" deals that demonstrably did not include a transfer of risk (because of the existence of "side letters" that precluded any claims), and hence were effectively loans. Whilst it could be argued that these deals did no more than delay the inevitable, they appear to have at least increased the size of the ultimate deficit.
- 1.12 The ambitious nature of the management approach created a strong "top line" (i.e. written, which may have increased the pressure on reserve adequacy and detracted from the need to protect "bottom line" results (i.e. net profit).
- 1.13 Although the Royal Commission clearly absolved the supervisor, APRA, from direct blame for the collapse, the report did highlight a number of areas where APRA's access to relevant data and other information was lacking and which, the Commissioner argued, caused a delayed response.
- 1.14 Governance was found to have been wanting across a number of aspects of HIH's operations, not the least being overseas subsidiaries and the underwriting of new lines of business.
- 1.15 The Australian supervisory requirements for general insurers have been renewed, and substantially upgraded with effect from 1 July 2002. Although already planned prior to the HIH failure, it can be argued that the final model was guided by an interpretation of the reasons behind the collapse in an attempt to prevent a repeat situation. In addition, the Royal Commissioner's report included 61 recommendations, many of which have already been acted on by the Australian Federal Government.

F.1.2 Independent Insurance (UK) Background:

- 1.16 Independent Insurance Plc was a UK based general insurer that specialised in general and public liability business transacted via intermediaries and as well as personal lines. The Company also participated in the London market by accepting lines on larger risks. Premium income was approximately £830m in 2000, however the company had expanded significantly in the year experiencing 64% growth in premiums. Approximately 75% of the written premium was in the hands of intermediaries at the end of 2000.
- 1.17 Independent Insurance was unusual in that since its floatation in 1993 on the stock exchange it had included an actuary's opinion on the reserving adequacy in its published accounts. This is not a requirement in the UK and to date only a few companies have followed this practice.
- 1.18 In the late 1990's there have been changes in the legal environment that have led to increased costs in settling liability claims. This has impacted the entire liability insurance market.

- 1.19 In May 2001 the Company's actuarial advisers advised Independent's board that it could not form an accurate actuarial assessment of the insurer's reserves after discovery of claims that had not been entered into the company's accounting systems. The Company was placed in provisional liquidation in June 2001.
- 1.20 The Serious Fraud Squad is investigating the circumstances surrounding the failure of the Company and therefore it will be some time before the full facts are revealed.
- 1.21 From press comment it appears that there were some very significant reinsurance contracts that were entered into by the Chief Executive without the full knowledge of the board.

Reasons

- Rapid growth
- Insufficient reserves
- Failure to price adequately
- Legal and claims environment changes
- Ineffective corporate governance

Warning Signs

- Dominant Chief Executive
- Negative cash flow
- Unidentifiable competitive advantage

F.1.3 Equitable Life Assurance Society (UK) ("the Society")

Background:

- 1.22 Equitable Life is a mutual insurance company with assets in excess of £25bn that has been trading since the eighteenth century and ceased accepting new business in December 2000. Between 1957 and 1988 most of the Society's new pensions policies included the right to use the fund built up to buy a pension on guaranteed terms ("GAR"). In 1978 legislation introduced Open Market Options ("OMOs") for new retirement annuity contracts. These options gave the policyholder the right to purchase an annuity in the open market.
- 1.23 When interest rates are high the policyholders can buy the annuity from the open market or the Society and when interest rates are low they can buy annuities from the Society using their GAR option.
- 1.24 The Society believed at that time that these policies provided a minimum guaranteed level of cash benefit and a minimum guaranteed level of annuity to protect policyholders against very low or very high interest rates. It believed that, in times of normal interest rates, bonus rates could be adjusted to avoid either of these guarantees causing significant cost to the with-profits fund. The bonus consisted of regular bonuses and a final bonus when the annuity was taken.
- 1.25 In 1988 the Society ceased offering GARs, however the existing GAR policyholders had the right to invest new premiums under their existing contracts (Open-ended option).
- 1.26 In late 1993 annuity rates fell below those guaranteed in most GAR policies. The Society declared final bonuses so that the value of total benefits, including the value of the guaranteed annuity, was broadly equal to each policy's notional share of the with profits fund ("asset share"). With lower annuity rates, the option to take a pension at the guaranteed annuity rate had significant value. If a policyholder chose not to take a GAR option, preferring the flexibility of an alternative option, then the benefits were of lower value. The Society believed that asset share should be delivered whichever option was selected. This led to a lower rate of final bonus for policyholders taking the GAR option than for those not using the GAR option.

- 1.27 In September 1998 a number of complaints were made to the Pensions Ombudsman as some policyholders believed that the Society's stance was unlawful.
- 1.28 The High Court held that the Society's Board had exercised its discretion as to final bonuses in a legally permissible manner. The Court of Appeal determined by a majority that it was not lawful to differentiate in this way within the group of GAR policyholders. It decided that GAR policyholders should receive the same proportionate final bonus irrespective of the form of the benefits taken (i.e. OMO or GAR option). The Court did not, however, decide that it was unacceptable for the Society to differentiate between GAR and Non-GAR policyholders in this respect. This allowed any cost of the GAR options to be "ring-fenced" to those policyholders with GAR policies. The Society appealed the decision to the House of Lords.
- 1.29 The House of Lords' decision took matters beyond this by saying that the Society could not apply a different bonus policy to GAR and non-GAR policyholders.
- 1.30 Equitable's solvency position and the decisions facing the prudential regulator FSA changed dramatically after the House of Lords' judgement. FSA then had to decide whether to close Equitable to new business or to allow them to try to sell the company as a going concern. The prudential regulator's primary objective was to protect existing policyholders' interests by ensuring that Equitable remained solvent and able to meet their liabilities. FSA took the view that Equitable's strategy of seeking a buyer was likely to result in the best outcome for policyholders. Equitable said, and FSA accepted, that a sale could result in Equitable acquiring sufficient funding to repay the seven months of bonus withheld in response to the House of Lords' judgement, and possibly to make a goodwill payment to existing policyholders on top of that. That position could only be achieved if at all through a sale.
- 1.31 However, the Board was not able to find a purchaser and on 8th December 2000 the Society was closed to new business. Nevertheless a report from the Parliamentary Ombudsman in July 2003 ruled out any prospect of compensation on the basis of regulatory failure.
- 1.32 People who had Equitable Life with-profits policies in force on 8 February 2002, when Equitable's Scheme of Arrangement came into effect, are covered by the terms of that scheme and are therefore unable to pursue complaints about misselling.
- 1.33 An initial adjudication by the Financial Ombudsman service in May 2003 found complainants had been given negligent and misleading advice. Equitable Life appealed and the ombudsman is now considering a final decision in the light of comments on a legal opinion on how to approach redress.
- 1.34 A key decision due in the last quarter of 2003 is the Financial Ombudsman's ruling on five lead mis-selling cases dealing with people who bought policies between September 1998 and July 2000 when the house of Lords decision was announced.

Equitable's Reputation

1.35 The Society had an enviable track record of offering a cost efficient service to its members. No commissions were paid to intermediaries and the administration capabilities were seen as amongst the best in the industry. As the Society did not pay commissions to intermediaries it is possible that very few intermediaries made any searching comparisons between the Society and its peers, and therefore the Society was able to adopt policies and practices which were not prevalent in the industry.

Equitable's Bonus Philosophy

1.36 The Society is unique amongst mutual insurers in that it did not maintain a free reserve. The philosophy was that each generation of policyholders should get its own asset share and neither inherit from the past or give to the future. This stance led to higher bonus levels in periods of high investment returns and this helped the sales force generate high volumes of new business, and this subsequently led to low costs of administration.

Equitable's Business Mix

1.37 The Society benefited from the legislation in the 1970's that encouraged saving for retirement and the majority of the Society's business relates to this type of business. Given its market positioning many of its members were self-employed and in the professions. As the contracts were designed to be flexible for the self-employed who tend to have variable earnings these contracts allow for variable premiums and therefore these policyholders have the open ended option to invest new premiums which benefit from the GAR. Approximately 25% of the assets are in respect of the GAR policyholders.

Industry Issues

1.38 Many intermediaries and insurance companies have had to pay compensation to policyholders because of alleged mis-selling of pensions contracts where individuals were encouraged to leave their occupational schemes even though this was not in the policyholder's best interests.

Reasons:

- Concentrated in pensions business
- High proportion of contracts with open ended options
- Low level of surplus (in line with philosophy)
- Court's view different to Directors
- No documented method of charging for guarantees and options (i.e. differential bonus policy from when contracts were introduced)
- Industry issues (pensions mis-selling)

F.1.4 Nissan Mutual Life (Japan) Background:

1.39 The Ministry of Finance ordered suspension of business according to Insurance Business Law in April 1997. It was the first failure of insurance company in Japan after the World War II. Liabilities in excess of assets were Y322.2 billion.

Possible Reasons:

- single premium (or prepaid premium) annuity with too high guaranteed rates
- bad debt caused by loans to realty business
- high risk investment
- collapse of "bubble" economy (crash of stock, property and real estate markets)
- continuation of extraordinary low interest rate policy
- a large amount of negative interest rate spread

1.40 The Life Insurance Association of Japan established a new company, (i.e. Aoba Life Insurance Company), and transferred insurance contracts en bloc to the company. Then the guaranteed interest rate was lowered. Aoba Life received financial aid of Y200 billion from The Life Insurance Industry's Fund for Policyholder Protection. In November 1999, Aoba Life was sold to a subsidiary company of Althemis, France. After this case, disclosure of solvency margin to the public became required.

F.1.5 Taisei Fire and Marine (Japan) Background:

1.41 The Taisei Fire & Marine filed for protection under the special corporation rehabilitation law for insurers to the Tokyo District Court in November 2001 and their property was preserved intact. Liabilities in excess of assets were Y94.5 billion.

Possible Reasons:

- a large amount of reinsurance claims to be paid particularly including claims arising from the 11 September 2001 terrorist attacks in the United States
- reinsurance arrangement was entrusted to an agent in the U.S.
- reinsurance contract does not transfer the risk
- management does not grasp the risk of the reinsurance contract
- insufficient risk management
- 1.42 The Taisei is to merge with the Sompo Japan Insurance Inc.; the second largest general insurance company in Japan, in December 2002 after it sold off the reinsurance business. The Taisei received financial aid of Y5.3 billion from the Non-life Insurance Policyholders Protection Corporation of Japan.

F.1.6 Common Threads

- 1.43 It would be too simplistic to dismiss the similarities between the various case studies as being related to "out on a limb" decisions by key personnel not covered adequately by internal risk control practices.
- 1.44 Perhaps a more helpful analysis would be to identify the lack of key information as a means of precipitating the type of badly founded decisions that appear to have led to most, if not, all of our examples of company failure.

APPENDIX G Introduction to Insurance Risk

G.1 Insurance Risk Example

- 1.1 The insurance business is difficult to assimilate for anyone not involved in its intricacies on a day-to-day basis. Many aspects of the business are counter-intuitive, even to those well versed in the broader commercial business markets.
- 1.2 The following example uses the analogy of the rolling of dice to help explain the uncertainty of outcomes for all insurance contracts, and the rationale for the need for capital support that this engenders for the business.

G.1.1 Insurance Basics

- 1.3 A number of features are common to all insurance transactions:
 - Outcomes of risks from individual policies are unknown when underwritten
 - However, when many similar risks are underwritten, expected results of total portfolio become more predictable
 - Claims processes are driven by:
 - Frequency (or probability) of a claim event occurring; and
 - Severity (of size) of a claim if it occurs
 - Risks inherent in different classes of insurance vary:
 - High frequency / low severity (e.g., motor and health) outcomes easy to predict reliably
 - Low frequency / high severity (e.g., earthquake and hail) outcomes hard to predict reliably

G.1.2 The Need for Capital

- 1.4 For an insurance company, capital is essentially needed to cover the risk of business outcomes being greater than those predicted (i.e. largely the cost of claims to be settled in the future relating to business already underwritten, but also assets being held to support those claims and the relevant future operational costs).
 - Premiums charged generally pay for expected losses (50% Probability) plus expenses of operation
 - Insurers must have capital so as to be able to fund unexpected losses (when claims exceed expected levels)
 - Profit margin in premium charged generally provides the return on capital needed when unexpected losses arise
 - Provides support in face of adverse unexpected outcomes from insurance activities, investment performance and operations
 - Finances growth and capital expenditure
 - Provides security to policyholders that claims will be paid
 - Can be defined as = Total Assets Total Liabilities

G.1.3 Capital Management

1.5 There is a "healthy tension" between policyholders' needs and shareholders' (stakeholders') needs that creates a balanced position when determining the appropriate capital support needs for the business.

The Balance of Capital:

- Policyholders and Supervisors will always like to see more capital
 - Better Security
 - Better Credit Ratings attract business
- Shareholders will generally like to see less capital
 - Enables better RoE
 - But less capital = higher risk
- 1.6 Here is a good point to introduce our example. It helps someone uninitiated in the intricacies of insurance contracts and risk management to understand how the "right" amount of capital is determined by a company's Board and senior management.

G.1.4 The Unbiased Die Example

1.7 We shall use the random outcomes of throwing an unbiased die to illustrate the uncertainty of outcomes from insurance contracts, and how insurers deal with the risks to their business that this entails.

G.2 Reserving for Claims Illustration

2.1 Assume we roll a unbiased die 100 times to represent the results of underwriting 100 policiesIf 1 is result, insurer pays a claim of \$1

If 2 is result, insurer pays a claim of \$2

• etc.

•

If 5 is result, insurer pays a claim of \$5.

Illustration

- 2.2 What is the likelihood that total claims will be greater than \$250?
- 2.3 The higher the amount reserved the greater the probability that there are sufficient funds to pay all claims.

Levels of Reserving - IBNR known as "incurred but not reported or claim amount (Before the Die is thrown)

Probability of	Level	\$ needed
Sufficiency PoS		
50%	Central estimate	\$250
75%	Illustrative Supervisor's Minimum	\$262
	Requirement	
90%	Illustrative Company Standard	\$272

- 2.4 Hence, at outset we have a liability of \$272
- 2.5 This amount is greater than the amount with which the Insurance Supervisor would see as an absolute minimum for safely managing the business, and consistent with the company's view of the "appropriate appetite for risk".

G.3 Premium and Profit

3.1 Retaining our "die" example, we now illustrate the concepts of premium and profit by introducing a cost for each of our 100 throws.

Illustration - Premium & Profit

3.2 For simplicity, assume there are no expenses.
Suppose insurer charges \$3 per throw.
Hence total premium = \$300
"Expected" profit = \$300 - \$250 = \$50
(A lower profit will occur 50% of the time and higher profit will occur 50% of the time)

Is this the profit that can be reported as earned?

Levels of Reserving (After 50 throws)

Suppose after 50 throws we have:

RESULT	FREQUENCY	CLAIMS \$
1	7	7
2	7	14
3	7	21
4	7	28
5	7	35
6	15	0
	50	105

3.3 Reserve will now be = Actual Claims + IBNR for remaining 50 throws = 105 + 272 x 50 / 100 = 241

"IBNR" stands for "Incurred but not Reported" and reflects the unknown outcome of claims relating to policies (or throws of the die) for which we have already received a "premium".

Profit Reported

3.4 Premium = \$300

Actual claims are \$105 compared \$125 expected

Hence profit after first 50 throws

= 300 - (105 + 272/2)

= 59

This profit has three components

- 25 Expected Profit ((300-250)/2)
- 20 "Unexpected" Profit (125-105)
- <u>14</u> Release of Risk Margin (50% of (300 272))
- 59
- 3.5 So we have demonstrably done better than expected. No uncertainty remains about the outcomes of the 50 throws we have made, so we can safely recognise the profit relating to those throws broken down into the three types in the above table.

Levels of Reserving (After 100 throws)

3.6 Suppose after 100 throws we have:

RESULT	FREQUENCY	CLAIMS \$
1	10	10
2	10	20
3	20	60
4	20	80
5	18	90
6	22	0
	100	260

3.7 Reserve will now be = Actual Claims = 260

Levels of Reserving

3.8 Premium earned for 100 throws = \$300 Actual claims are \$260 compared to \$250 expected Hence profit from 100 throws

= 300 - 260

= 40

Profit/(loss) from 100 throws was

- 50 Expected Profit
- (10) "Unexpected" Loss (250-260)
- 40

- 3.9 Note that the result of the second 50 throws was a loss of 19 as 40 59 = (19)
- 3.10 So, because we have presumably already used the profit from the first 50 throws, we must now draw on our capital to support the loss from the second 50 throws. (If we were being prudent, of course, some of our profit from the first 50 throws may have bolstered our capital).

G.4 Capital Requirement

- 4.1 Even if we were being prudent, we could not guarantee that we would be solvent after either the first 50 or first 100 throws, or whenever unless we had an extra "cushion" of capital to support our business. (What if the second 50 throws had come first? What if we had the same outcome for the second 50 throws for all of the 100 throws?!)
- 4.2 Assume that the Minimum Capital Requirement (MCR) the Supervisor requires in addition to the outstanding claims liability in this case is \$100.
- 4.3 Hence possible range of funds insurer needs at outset is:

PoS	Liability	+	MCR	=	Total Funds Needed
	75%	262+	100	=	362
	90%	272 +	100	=	372

Illustration - Capital Needed

4.4 What capital does insurer need to have in addition to the premium charged to be able to operate?

PoS	Total Funds	-	Premium	=	Capital
			Needed		
	Charged		Needed		
75%	362	-	300	=	62
90%	372	-	300	=	72

4.5 Note that this reflects the minimum capital support position.Illustration Profit (Loss)& Returns on capital (RoC)

PoS	CAPITAL LEVEL	WORST RESULT	BEST RESULT	EXPECTED RESULT	EXPECTED RoC
75%	62	(200)	300	50	80%=50/62
90%	72	(200)	300	50	69%=50/72

Illustration Risk of Ruin

- 4.6 But what is wrong with these scenarios? If claims exceed \$372 the insurer will fail! Hence, the insurer needs reinsurance to prevent this outcome.
- 4.7 "Hence the insurer probably needs more capital, since the likelihood of failure will appear too great to a prudent Board of Directors. An alternative that may appear more efficient is the use of reinsurance. We shall extend our example to include an illustration of the value of reinsurance in reducing the risk to the insurer"

G.5 Reinsurance

- 5.1 Illustration- Reinsurance
 - If claims exceed \$362 an insurer operating at 75% PoS will be bankrupt (\$372 for 90% PoS).
 - The Supervisor will want safeguards in place to prevent this, so reinsurance must be purchased.
 - If reinsurer agrees to pay all claims in excess of \$362 for a cost of \$38, or all claims over \$372 for \$36, what is the result?

Illustration- Reinsurance Impact

PoS	CAPITAL LEVEL	EXPECTED PROFIT BEFORE	REINSURANCE COST	EXPECTED PROFIT AFTER	EXPECTED RoC
		REINSURANCE		REINSURANCE	
75%	62	50	38	12	19%
90%	72	50	36	14	19%

5.2 It will be noted that the return on capital is now much lower than in our "un-reinsured" illustration. However, it is still better than the return would have been if we had increased the capital support to the substantially increased level that would have effectively nullified the risk of failure (without the reinsurance)

G.6 Summary

- 6.1 This simple example shows that,
 - Reserving Levels
 - Capital Requirements
 - Premiums Charged
 - Projected Profit
 - Expected Return on Capital; and
 - Reinsurance needs
 - All are INTERLINKED in their impact on an insurer's overall financial position.
- 6.2 The example also demonstrates how the risks inherent in insurance business create a distinctive set of management decisions related to the balance between risk and return on invested capital.

APPENDIX H Analytic Methods

H.1 Developing a Base-Line Model

- 1.1 This Appendix deals initially with analytic methods for developing the base-line model, the multivariate Normal distribution, as well as risk measure. It then goes on to deal with non-Normal risks for which analytic approximations to risk measures are developed. These are used for developing factor-based formulas that are good approximations to results using an internal model.
- 1.2 Since, for internal models, the distribution of the outcome X may be quite complicated, it is useful to develop a "base-line" model of the distribution of the outcome, recognizing that approximations are involved. The cumulant generating function of X is

$$\varphi_X(t) = \ln E(e^{tX}).$$

1.3 The cumulant generating function for each distribution is unique and characterizes the distribution. It can be written as a series expansion as

$$\varphi_X(t) = \mu t + \sigma^2 \frac{t^2}{2} + \kappa_3 \frac{t^3}{3!} + \kappa_4 \frac{t^4}{4!} + \cdots$$

1.4 Where μ is the mean of the distribution, σ^2 is its variance and $\kappa_3, \kappa_4, \cdots$ are the higher cumulants of the distribution. The Normal distribution has cumulant generating function

$$\varphi_X(t) = \mu t + \sigma^2 \frac{t^2}{2}$$

- 1.5 With all higher cumulants equal to zero. Hence, the Normal distribution can be viewed as a firstorder approximation to the "true" distribution.
- 1.6 Applying this idea to all the risk components, as well as at to the aggregate risk, results in the multivariate Normal distribution serving as the first-order approximation or base-line model.
- 1.7 The error of the approximation can be measured by examining the size of the higher cumulants or by other methods. One such method is to obtain upper bounds on the error of key quantities such as risk measures when the mean and variance are fixed but the higher cumulants are unknown. There is well-developed theory for finding these upper bounds. It is not anticipated that such bound would be used in practice. However, they are useful for a supervisor in evaluating the maximum possible error in adopting a relatively simple model as a baseline model.
- 1.8 If $X_1, X_2, ..., X_n$ have a multivariate Normal distribution (or the Normal model is used as a first approximation), the model is completely specified by its mean vector and its covariance matrix:

$$\begin{pmatrix} \sigma_1^2 & \rho_{12}\sigma_1\sigma_2 & \cdots & \rho_{1n}\sigma_1\sigma_n \\ \rho_{12}\sigma_1\sigma_2 & \sigma_2^2 & \cdots & \rho_{2n}\sigma_2\sigma_n \\ \vdots & \vdots & \vdots & \vdots \\ \rho_{1n}\sigma_1\sigma_n & \rho_{2n}\sigma_2\sigma_n & \cdots & \sigma_n^2 \end{pmatrix},$$

- 1.9 Where $\rho_{i,j}$ is the correlation between the *i*-th and the *j*-th risk components, and σ_j is the standard deviation of the *j*-th component.
- 1.10 The standard deviation of the aggregate distribution is $\sigma = \sqrt{\sum_{i,j=1}^{n} \rho_{ij} \sigma_i \sigma_j}$.
- 1.11 Thus, within the Normal distribution framework, by specifying the correlations of all pairs of component risks and the means and standard deviations of each, the aggregate distribution can be fully specified.
- 1.12 In practice, two major sources of error need to be recognized. First, when the Normal model is used as a base-line model, the "true" distribution, errors can occur. The true probability distributions associated with particular risks may be quite different from the Normal distribution. Although the Normal distribution is used extensively in financial theory, it is often found the observed extreme events suggest a tail of the distribution that is heavier than that of the Normal distribution. Heavier tails are also observed for losses for many insurance lines, especially in the property-liability areas. Typical risk measures, such as standard deviation or VaR can seriously underestimate the true risk the true model is significantly different from the Normal distribution. Second, when the marginal distributions of the various risks are combined into a multivariate distribution, the linear correlation used in the Normal distribution, since normal correlation describes the degree of linearity of the relationship between two risks over the entire range of the distributions, and does not focus mainly on the tails, which is the area of interest for supervisors?
- 1.13 A supervisory framework can recognize the errors described in the previous paragraph in a number of ways:
 - a) Requiring a multiple (e.g. 150%) of the capital indicated by using a specific model. This provides a cushion for "model error."
 - b) Incorporating directly some conservative elements into assumptions, parameters, and correlations in the base-line model.

H.2 Base-Line Capital Requirement Framework

- 2.1 The base-line risk measure "standard deviation" is closely related to other concepts in the case of normally distributed risks. One such concept is the Value-at-Risk (VaR) that corresponds to a quantile that is away from the mean by a fixed multiple of the standard deviations. For instance, the 99th percentile corresponds to 2.33 times standard deviation in addition to the mean as a total balance sheet requirement.
- 2.2 When the standard deviation is used as the risk measure and the indicated capital requirement is a multiple of the standard deviation

$$C_j = k\sigma_j,$$

2.3 The capital requirement of the aggregate risk can be written as

$$C = \sqrt{\sum_{i,j=1}^{n} \rho_{ij} C_i C_j} \,.$$

- 2.4 This formula provides a base-line formula capital requirement. It requires calculation of the indicated capital requirement for each component risk and combining them using the above formula which incorporates the linear correlation coefficient as a measure of association between the component risks. It is noteworthy that for the Normal distribution, the above formula also holds if TailVaR is used as a risk in place of standard deviation.
- 2.5 In practice, insurance risks and investment risks often depart form the multivariate Normal assumptions, and the baseline risk-measures become less effective. Common criticisms of risk measures based on the Normal distribution include:
 - a. they may fail to differentiate between upside and downside for risks with skewed and fattailed distributions;
 - b. they may fail to reflect non-linear correlations (e.g. higher tail correlations); and
 - c. they may violate some of the "consistency" rules for a coherent risk measure.²⁰
- 2.6 To address some of these issues, there have developed analytic tools that can overcome the drawbacks of the baseline risk measures for non-Normal distributions, while still retaining the baseline for Normally distributed risks.
- 2.7 An example of one such coherent risk measure that extends the standard deviation for non-Normal risks is the Wang Transform. For a risk with a loss distribution F(x), the Wang transform $F^*(x)=\Phi[\Phi^{-1}(F(x))-\lambda]$ gives a transformed distribution, where Φ is the standard normal cumulative distribution function. The Wang transform of a Normal distribution with mean μ and standard deviation (volatility) σ is another Normal distribution but with the mean replaced by $\mu+\lambda\sigma$ and the standard deviation, σ , unchanged. In this case, the mean of the transformed distribution $\mu+\lambda\sigma$ is the risk measure, or required capital.

H.3 Analytic Approximations

- 3.1 In order to develop factor-based formulas for capital requirements that reflect the individual characteristics of an insurance company, one needs to develop "exposure" quantities, measuring the level of risk-exposure of the company to any risk type. Thus, one can consider the capital *C* as a function of the exposure levels of each of the component risks. In practice these exposure measures need to be defined. Simple proxies for exposures can include amounts-at-risk, premiums, or reserves, among others.
- 3.2 Thus one can write

$$C(e_1, e_2, \dots) = \int x \cdot dg[F(x)]$$

where e_j is the exposure measure for the *j*-th risk component. Note that we can rewrite the loss as

 $X_j = e_j \cdot Y_j$

²⁰ See Artzner, Ph 1991 Application of coherent risk measures to capital requirements in insurance. NAAJ 3, Nov 2,11-25*t*

where Y_i is a new standardized loss variable.

 $C(\lambda e_1, \lambda e_2, \dots) = \lambda C(e_1, e_2, \dots).$

- 3.3 This is not generally true. It is true for some types of risks but the basis of insurance is LLN, where the very idea is that the homogeneity property is NOT satisfied (e.g. if the amounts at risk in fire insurance increase due to increase in the number of policies). The expression above should be modified accordingly. Consequently, all subsequent considerations (except as approximations) hold only for cases, where homogeneity property is satisfied.
- 3.4 This is easily justified by considering a change of currency. From this, it follows that

$$\sum_{j} \frac{\partial C}{\partial e_{j}} \cdot e_{j} = C.$$

H.4 Linear Approximation

- 4.1 One can then write a simple series expansion for the capital function *C*. For a specific company in terms of the capital function for a base-line representative company with exposures e_1^0, e_2^0, \dots . The mix of risks of the base-line representative company will be referred to as the target point or target mix.
- 4.2 In practice most capital functions will be highly non-linear functions of the exposure variables and will likely exist as complex computer models rather than closed form analytic expressions. Since the capital function may be difficult and expensive to compute, it makes sense to have analytic expressions which approximate the capital in a neighbourhood of a target point e_1^0, e_2^0, \dots . A simple Taylor expansion about this point yields

$$C(e_{1,}e_{2},...,e_{n}) = C(e_{1}^{0},e_{2}^{0},...) + \sum_{j} \frac{\partial C}{\partial e_{j}^{0}} \cdot (e_{j}-e_{j}^{0}) + \sec ond \& higher order terms,$$
$$= [C(e_{1}^{0},e_{2}^{0},...) - \sum_{j} \frac{\partial C}{\partial e_{j}^{0}} \cdot e_{j}^{0}] + \sum_{j} \frac{\partial C}{\partial e_{j}^{0}} e_{j} + \sec ond \& higher order terms.$$

4.3 However, the homogeneity of the capital results in

$$C(e_{1,}e_{2,}...) = \sum_{j} \frac{\partial C}{\partial e_{j}^{0}} \cdot e_{j} + \sec cond \& higher order terms.$$

4.4 This means that if the actual mix of risks is close enough to the representative mix, the capital requirement is approximated by a factor-based formula where the factors are derived from the derivatives of the capital function at the target risk mix. Note that the factors depend on the mix of risks but not the scale of the risks at the target point.
H.5 Quadratic Approximation

5.1 If the linear approximation described above is not good enough it is possible to develop a convenient quadratic approximation to C^2 . If we define the matrix $r_{i,j}$ at the target risk mix by

$$r_{i,j} = \frac{1}{2} \frac{\partial^2 C^2}{\partial e_i^o \partial e_j^o}$$

5.2 then a Taylor expansion of the function of C^2 shows that

$$C^{2}(e_{1,}e_{2},...,e_{n}) = \sum_{i,j} r_{i,j}e_{i}e_{j} + third \& higher order terms.$$

5.3 This result clearly shows that, the approximation $C = \sqrt{\sum_{i,j} r_{i,j} e_i e_j}$ should be valid in a neighbourhood of the torget risk mix. This is in the same spirit as the base line conital for

neighbourhood of the target risk mix. This is in the same spirit as the base-line capital formula suggested above.

5.4 A paper²¹ shows that for a standard deviation or TVaR risk measure on multivariate Normal risks the quadratic approximation is exact. In this case the $r_{i,j}$ terms are the linear correlation coefficients.

H.6 Higher Order Approximation

6.1 The approximation process generalizes to arbitrarty m in the sense that if we look at a Taylor expansion of C^m we find that the first m terms of the expansion collpase down to an expression of the form

$$C^{m}(e_{1,}e_{2},...,e_{n}) = \frac{1}{m!} \sum_{i_{1}i_{2}...i_{m}} \frac{\partial^{m}C^{m}}{\partial e_{i_{1}}^{0}\partial e_{i_{2}}^{0}...\partial e_{i_{m}}^{0}} e_{i_{1}}e_{i_{2}}...e_{i_{m}} + terms \ of \ order \ m+1 \ \& \ higher.$$

H.7 Factor-Based Assessment

- 7.1 The methods described in the last section show how the base-line approximation can be improved. The base-line approximation is based on multivariate Normal distribution using standard deviation or TVaR as a risk measure. The results of quadratic approximation above allow for any risk measure and any distribution. One needs to obtain the second order derivatives of the square of the capital requirement C for the representative company yielding the generalizations of the linear correlations. Once this is done for the industry, the calculations for each company are analagous to those under the base-line approximation.
- 7.2 Clearly, higher order approximation is also possible. However, at this point it is not known how much gain there will be in going beyond quadratic approximation.

²¹ H. Panjer, "Measurement of risk, solvency requirements and allocation of capital within financial conglomerates" Institute of Insurance and Pension Research, University of Waterloo, 2002.

Appendix I Copulas

I.1 Introduction

1.1 Suppose that the overall risk X of the company can be described as, $X = \sum_{j=1}^{n} X_{j}$ (i.e., X can

be decomposed into risk components X_{j}).

- 1.2 In the sequel, we assume that we can have adequate information and can describe the risks (i.e., we have models for the individual risks or risk components X_j). We now need to address the issue of combining these risks in order to obtain an appropriate model for X.
- 1.3 The model for X is completely specified if we assume a multivariate Normal setting in which each component has a univariate normal distribution and all dependencies are expressed through correlations. However, insurance claim data immediately show shortcomings of this assumption as,
 - loss distributions are usually skewed and heavy tailed (i.e., the downside risk due to large losses is substantial,
 - dependency between risks usually increases in the tails (i.e., various lines of business may look almost independent in "normal" situations, but they are strongly correlated in the tails as occurred with September 11, 2001).
- 1.4 Notice that in a multivariate Normal setting, the X_j 's are asymptotically independent if the linear correlations are less than one²². Therefore, it is advisable to model dependencies in the above setting in a different way. To this end, copulas provide one feasible framework.²³
- 1.5 The following paragraphs briefly provide a mathematical overview, which is also given in more detail in Appendix H. More importantly, we describe in this Appendix more intuitively how copulas work and why they are an alternative approach to describing dependencies.
- 1.6 An *n*-dimensional copula is an *n*-dimensional distribution function with uniform marginal distributions. The dependence structure between X_1, \ldots, X_n is described by *C* if the distribution function *F* of X_1, \ldots, X_n is given by

 $F(x_1, ..., x_n) = C(F_1(x_1), ..., F_n(x_n))$

where F_j denotes the marginal distribution function of X_j . In other words, the joint distribution of the quantiles of X_1, \ldots, X_n is given by the function C.

²² See page 19 of P. Embrechts, F. Lindskog, A. McNeil, *Modelling Dependence with Copulas and Applications to Risk Management*, Sept. 2001, www.risklab.ch/Papers.html#MTLindskog.

WWW.FISKIAD.Ch/Papers.html#N1LindsKog
 ²³ For a comprehensive introduction and discussions of copulas, we refer to the papers Embrechts *et al (op cit)* and P. Embrechts, A. McNeil, D. Straumann, *Correlation and Dependence in Risk Management: Properties and Pitfalls*, RiskLab Research papers, Dept. Math. ETH Zürich, Aug. 1999, www.risklab.ch/Papers.html#Pitfalls which also serve as the main references for this section.

1.7 To illustrate the concept of copulas, four graphs have been prepared. Graph I.1 shows an example of two random variables X_1, X_2 which each have a marginal uniform distribution. The simulated joint samples are scattered across the plot showing no pattern and thus the outcome of the one variable seems to have no connection to the outcome of the other variable. In this case, the two variables are mutually independent.



Graph I.1: Scatterplot of Two Independent Variables

1.8 The other extreme of the joint outcome of two uniform variables would be that the outcome of X_1 predetermines the outcome of X_2 . For example in Graph I.2, $X_1 = X_2$. In this case, the two random variables exhibit complete dependency.

Graph I.2: Scatterplot of Two Perfectly Correlated Variables



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1.9 Finally, the most interesting case and more typical situation is when there is some dependency between the variables. The outcome of the two variables may appear at first glance to be uncorrelated. This is illustrated in Graph I.3. It would appear that the outcomes are approximately uniformly distributed over the square. However, on close examination of the more extreme cases where both variables are close to 1 or both are close to 0, the outcomes appear to be more dense (i.e., more clustered). This suggests that if X_1 is close to 1, it implies that X_2 is also more likely to be close to close to 1 as well.



Graph I.3: Scatterplot of Two Variables That Exhibit Correlation in Both Tails

1.10 Graph I.4 shows the application of a copula to two risks X_1, X_2 that are more representative of real data than Graph I.3. In this graph the axes are now in terms of real monetary values.



Graph I.4: Scatterplot of Outcomes of Two Lines of Insurance.

- 1.11 It can be seen from Graph I.4 that the nature of dependency between the two risks is different for smaller outcomes (as depicted in the lower left region) from that for large outcomes (as depicted in the upper right). In fact, the interdependency of the two risks when one of the outcomes is small is relatively low. However, when the outcome of one of the variables becomes larger, the other is more likely to also be larger, indicating an increasing co-movement. This example therefore shows clearly that the two risks have a dependency in the right-hand tail.
- 1.12 More technical background on copulas is given in subsequent sections of this appendix and in the references already cited.

I.2 Theoretical Background

- 2.1 In order to capture stochastic dependencies between insurance risks, the traditional concept of linear correlation is insufficient. In this technical appendix we introduce some of the mathematical framework of copulas which can be used to model dependencies on a deeper level. In this way, one can for instance take into account that many insurance risks seem to be almost independent in "normal" situations but heavily dependent in the extreme.
- 2.2 A copula is a function that associates the quantiles of one random variable to the quantiles of another random variable.

2.3 **Definition:** A *n*-dimensional copula is a distribution function $C:[0,1]^n \rightarrow [0,1]$ with uniform marginal distributions. The dependence structure between X_1, \ldots, X_n is described by *C* if the distribution function *F* of X_1, \ldots, X_n is given by

$$F(x_1,...,x_n) = C(F_1(x_1),...,F_n(x_n))$$

where F_j denotes the marginal distribution function of X_j . In other words, the joint distribution of the quantiles of X_1, \ldots, X_n is given by C.

- 2.4 Suppose now that the dependence between X_1, \ldots, X_n can be described by a copula *C* and that each X_j can be adequately represented by a model (i.e., we know the marginal distribution functions F_j). Furthermore, we assume that we have an algorithm to simulate independent random vectors (u_1^k, \ldots, u_n^k) , $k = 1, 2, \ldots$ from *C*. Then $F_1^{-1}(u_1^k) + \cdots + F_n^{-1}(u_n^k)$ are independent random samples of *X* and in this way we have obtained a model for *X*.
- 2.5 **Definition:** The *upper* and *lower tail dependence* between two random variables is respectively

 $\begin{aligned} \lambda_{u}(X_{1}, X_{2}) &= \limsup_{u \in 1} P(X_{1} > F_{1}^{-1}(u) \mid X_{2} > F_{2}^{-1}(u)) \\ \text{and} \\ \lambda_{L}(X_{1}, X_{2}) &= \limsup_{u \in 0} P(X_{1} \le F_{1}^{-1}(u) \mid X_{2} \le F_{2}^{-1}(u)), \end{aligned}$

- 2.6 The tail dependencies can be determined *directly* from the copula for X_1 and X_2 .
- 2.7 Since copulas describe the dependence between variables on the level of quantiles, the following property holds:
- 2.8 **Property:** Suppose that *C* is a copula for X_1, \ldots, X_n . If $\varphi_1, \ldots, \varphi_n$ are non-decreasing functions, then *C* is also a copula for $\varphi_1(X_1), \ldots, \varphi_n(X_n)$.
- 2.9 This property has the following practical applications:
 - Insurances, government agencies, brokers etc have access to sensitive claims data which they do not want to or may not be allowed to make public use of. However, after transforming the data by an increasing function, the data is not back traceable, i.e. has lost substantial sensitivity, but it contains still the same information for estimating copulas. Copulas are thus a potential tool to make otherwise sensitive data available to public use with out violating confidentiality.
 - A reinsurance structure in a certain line of business typically is a non-decreasing function of the underlying losses. Hence, the copula for the gross losses can reliably be assumed to be the same for the net losses.

I.3 Some Parameterised Families of Copulas

Gauss Copulas

- 3.1 Let Φ denote the distribution function of the standard normal distribution and Φ_R^n the *n*-variate standard normal distribution function with correlation matrix R. The *n*-dimensional Gaussian copula with correlation matrix R is given by $C_{R}^{\text{Gauss}}(u_{1},\ldots,u_{n}) = \Phi_{R}^{n}(\Phi^{-1}(u_{1}),\ldots,\Phi^{-1}(u_{n})).$
- If X_1, \ldots, X_n are multivariate normally distributed with correlation matrix R, then their copula is 3.2 C_{P}^{Gauss} .
- 3.3 It is important to note that Gauss copulas are not suitable to model the tail of X. Indeed, if the correlation $R_{ii} \neq 1$, then the tail dependencies between X_i and X_i are zero²⁴.

T-Copula

- 3.4 In order to overcome this shortcoming of Gaussian copulas, t-copulas could be used. In the same way as the Gaussian copulas, they are parameterized by a "correlation matrix" but there is one additional parameter to control the tail dependencies. The limiting case $v = \infty$ is the corresponding Gaussian copula.
- 3.5 Suppose Y_1, \ldots, Y_n are multivariate normally distributed with correlation matrix R and S is a random variable with χ^2_{ν} -distribution. Let $t^n_{\nu,R}$ denote the distribution function of

 $\sqrt{\nu/S} \cdot (Y_1, \dots, Y_n)$ and t_v the distribution function of $\sqrt{\nu/S} \cdot Y_1$, i.e., the equal margins of $t_{\nu,R}^n$. Then the *t*-copula with parameters v, R is given by

$$C_{\nu,R}^{t}(u_{1},\ldots,u_{n}) = t_{\nu,R}^{n}(t_{\nu}^{-1}(u_{1}),\ldots,t_{\nu}^{-1}(u_{n}))$$

- 3.6 The tail dependencies for the copula $C_{v,R}^{t}$ are $\lambda_{U}(X_{i}, X_{j}) = \lambda_{L}(X_{i}, X_{j}) = 2 - 2t_{\nu+1} \left(\sqrt{\nu+1} \sqrt{1 - R_{ij}} / \sqrt{1 + R_{ij}} \right).$
- In order to aggregate models for X_1, \ldots, X_n with a t-copula, we need an algorithm to generate 3.7 independent samples (u_1, \ldots, u_n) of $t_{v,R}^n$. A feasible algorithm is:
 - Find the Cholesky²⁵ decomposition A of R. •
 - Simulate *n* independent random numbers z_1, \ldots, z_n from the standard normal distribution
 - Simulate a random number s from χ_{v}^{2} independent of z_{1}, \ldots, z_{n} •
 - Set $\mathbf{x} = \sqrt{v/s} \cdot A\mathbf{z}$ •
 - Set $u_{i} = t_{v}(x_{i}), j = 1, ..., n$

²⁴ See page 19 of P. Embrechts, F. Lindskog, A. McNeil, Modelling Dependence with Copulas and Applications to Risk Management, Sept. 2001, www.risklab.ch/Papers.html#MTLindskog. ²⁵ See W. Press, S. Teukolsky, W. Vetterling, B. Flannery, *Numerical Recipes in C*, 2nd Edition, Cambridge University Press, 1992 for an

algorithm for Cholesky decomposition.

3.8 This algorithm to generate random samples of the t-copula is fast.

Comonotonic Copula:

- 3.9 The comonotonic copula ensures that risks always move in the same direction. This is a kind of "worst case" for insurers. As such, the results provide an upper bound on the capital requirement since quantiles (VaR) and TailVaR risk measures are additive. In the special case of the multivariate Normal distribution, the results correspond to assuming a correlation of 1 between risks.
- 3.10 In general, any dependency at a single point in the multivariate distribution can be described as a linear combination of the comonotonic copula and the independent copula (obtained by multiplying marginal distributions together).

Glossary

Coefficient of variation	The ratio of the standard deviation to the mean of a distribution.
Coherent	 A risk measure satisfying the following four axioms is called coherent (note that other risk measures not satisfying one or more of these axioms may have useful properties as well). Subadditivity - Capital for two risks is not larger than sum of capital for each risk separately. Positive homogeneity - Capital is invariant under scale transformations (doubling the risk doubles the capital). Translation invariance - Capital is invariant under location transformations (adding a certain risk increases the capital with this certain amount). Monotonicity - Capital is larger for larger risks.
Comonotonic	Two random variables, X and Y, are said to be comonotonic if there exists another variable, Z, and increasing real-valued functions, u and v, such that $X = u(Z)$, $Y = v(Z)$. When the outcomes of insurers A and B are comonotonic; that is, they always move up or down together, then it is believed that the required capital for the combined company should equal the sum of the required capitals for the two individual companies.
Copula	A copula is a function that associates the distribution function of one random variable to the distribution function of another random variable. Using copulas to model dependencies on a deeper level, one can for instance take into account that many insurance risks seem to be almost independent in "normal" situations but heavily dependent in the extreme.
Credit risk	Credit risk is the risk of default and change in the credit quality of issuers of securities, counter-parties and intermediaries, to whom the company has an exposure.
Diversifiable risk	A risk is diversifiable when the volatility of the average claim amount declines as the block of combined insurer risks increases.
Economic capital	Economic capital is what the firm judges it requires for ongoing operations and, for an insurance company, what it must hold in order to gain the necessary confidence of the marketplace, its policyholders, its investors and its supervisors.
Liquidity risk	Liquidity risk is exposure to loss in the event that insufficient liquid assets will be available, from among the assets supporting the policy obligations, to meet the cash flow requirements of the policyholder obligations when they are due or assets may be available, but only at excessive cost.
Market risk	 Market risk arises from the level or volatility of market prices of assets. Market risk involves the following: exposure to movements in the level of financial variables exposure of options to movements in the underlying asset price exposure to other unanticipated movements in financial variables exposure to movements in the actual or implied volatility of asset prices and options
Non-diversifiable risk	A risk is non-diversifiable when it cannot be (relatively) reduced by increasing portfolio size.

Operational risk	Operational risk is defined as the risk of loss resulting from inadequate or failed internal processes, people, systems or from external events.
Quantile	A α -quantile of a random variable <i>X</i> is any value <i>x</i> such that $Pr(X \le x) = \alpha$. For example, the 95 th percentile of the distribution is the value for which there is a probability of exceedence of 5%. Value-at-Risk (VaR) is a quantile of the distribution.
Risk	Risk is the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood.
Systematic risk	Also called non-diversifiable risk
TVaR	Tail-Value-at-Risk (TVaR or TailVaR) is the quantile VaR plus the average exceedence of that quantile if such exceedence occurs. Alternatively, TVaR at level p is the arithmetic average of all VaR's from level p on. It is sometimes also called Conditional Tail Expectation (CTE) or Expected Shortfall.
Time horizon	Time horizon is a period over which a risk is measured. Assuming a certain fixed acceptable level of insolvency risk per year, extending the time horizon should always result in a higher capital need.
Total balance sheet	Total balance sheet requirement is the sum of both the liabilities and solvency capital requirement upon realistic values. Using the total balance sheet requirement allows solvency assessment to be relatively independent of the accounting system.
Type A risk	Type A credit risk is the credit risk relating to actual assets held.
	Type A market risk is the market risk relating to the volatility of the market value of the actual assets held and the market value of the replicating portfolio of assets.
Type B risk	Type B credit risk is the credit risk involved with future reinvested assets.
	Type B market risk is the market risk involved with future reinvestment assets and long term options and/or guarantees.
Underwriting risk	Underwriting is the specific insurance risk arising from the underwriting of insurance contracts. The risks within the underwriting risk category are associated with both the perils covered by the specific line of insurance and with the specific processes associated with the conduct of the insurance business.
Volatility risk	Volatility is the risk of random fluctuations in either the frequency or severity of a contingent event.



International Actuarial Association Association Actuarielle Internationale

1 December 2018

ISAP 1

International Standard of Actuarial Practice 1

General Actuarial Practice

ISAP 1 International Standard of Actuarial Practice 1 General Actuarial Practice

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Preface

This International Standard of Actuarial Practice (ISAP) is a model for actuarial standardsetting bodies to consider.

The International Actuarial Association (IAA) encourages relevant actuarial standard-setting bodies to maintain a standard or set of standards that is substantially consistent with this ISAP to the extent that the content of this ISAP is appropriate for <u>actuaries</u> in their jurisdiction. This can be achieved in many ways, including:

- Adopting this ISAP as a standard with only the modifications in the Drafting Notes;
- Customizing this ISAP by revising the text of the ISAP to the extent deemed appropriate by the standard-setting body while ensuring that the resulting standard or set of standards is substantially consistent with this ISAP;
- Endorsing this ISAP by declaring that this ISAP is appropriate for use in certain clearly defined circumstances;
- Modifying existing standards to obtain substantial consistency with this ISAP; or
- Confirming that existing standards are already substantially consistent with this ISAP.

A standard or set of standards that is promulgated by a standard-setting body is considered to be substantially consistent with this ISAP if:

- There are no material gaps in the standard(s) in respect of the principles set out in this ISAP; and
- The standard or set of standards does not contradict this ISAP.

If this ISAP is translated for the purposes of adoption, the adopting body should select three verbs that embody the concepts of "must", "should", and "may", as described in paragraph 1.6 Language, even if such verbs are not the literal translation of "must", "should", and "may".

ISAPs are model standards of actuarial practice and, as such, are not binding on any actuary.

ISAP 1 was last revised in 2017 for conformance changes only. This new version of ISAP 1 (the first revision with any substantive changes) includes the guidance from ISAP 1A - Governance of Models which is being retired concurrently.

In referring to ISAPs, the unqualified name (e.g. ISAP 1) refers to the latest version of the ISAP adopted by Council. If there is a need to refer to a prior version of the ISAP, the year of adoption should be added in parentheses, e.g. ISAP 1 (2017). A standard setter wishing to declare substantial consistency with an older version of an ISAP should use this nomenclature.

ISAP 1 was adopted by the <u>IAA</u> Council in November 2012. The reformatted version (to accommodate the separate Glossary) was adopted in October 2013. The conforming version (with no material changes) was adopted in April 2017. This revision was adopted on 1 December 2018.

[Drafting Notes – When an actuarial standard-setting organization adopts this ISAP it should:

1. Replace "ISAP" throughout the document with the local standard name, if applicable;

- 2. Choose the appropriate phrase and date in paragraph 1.8.;
- 3. Choose the appropriate phrase in sub-paragraph 2.1.2.a.;
- 4. *Review this ISAP for, and resolve, any conflicts with the local law and code of professional conduct; and*
- 5. Delete this preface (including these drafting notes) and the footnotes associated with paragraphs 1.8. and 2.1.2.a.]

Section 1. General

- **1.1. Purpose** This ISAP provides guidance to <u>actuaries</u> when performing <u>actuarial services</u> to give <u>intended users</u> confidence that
 - <u>Actuarial services</u> are carried out professionally and with due care;
 - The results are relevant to their needs, are presented clearly and understandably, and are complete; and
 - The assumptions and methodology (including, but not limited to, <u>models</u> and modelling techniques) used are disclosed appropriately.

1.2. Scope

- 1.2.1. This ISAP is a general standard. It applies to all <u>actuarial services</u> performed by an <u>actuary</u> unless an element of guidance is explicitly superseded by another standard such as a practice-specific standard or by <u>law</u>.
- 1.2.2. Usually, the intent of a practice-specific standard is to narrow the range of practice considered acceptable under the general standards. In exceptional cases, however, the intent of a practice-specific standard 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 standard like: "Notwithstanding the general standards, the <u>actuary</u> should . . .", followed by a description of the exception.
- **1.3.** Compliance An <u>actuary</u> may fail to follow the guidance in an ISAP but still comply with it where the <u>actuary</u>:
 - 1.3.1. Complies with requirements of <u>law</u> that conflict with the ISAP;
 - 1.3.2. Complies with requirements of the actuarial code of professional conduct applicable to the <u>work</u> that conflict with the ISAP; or
 - 1.3.3. Departs from the guidance in the ISAP and provides, in every <u>report</u> to which it is relevant, an appropriate statement with respect to the nature, rationale, and effect of any such departure if the guidance is expressed as "should". If the guidance is expressed as "must", the <u>actuary</u> may not depart from it unless paragraph 1.3.1. or paragraph 1.3.2. applies.
- 1.4. Applicability ISAP 1 provides guidance to <u>actuaries</u> on general actuarial practice when performing <u>actuarial services</u>. Other ISAPs do not repeat the general guidance provided in ISAP 1. Compliance with ISAP 1 is a prerequisite to compliance with all other ISAPs. An <u>actuary</u> who is performing these <u>actuarial services</u> may be acting in one of several capacities such as an employee, management, director, external adviser, auditor, or supervisory authority.
 - 1.4.1. The application of the ISAP is clear when a single consulting <u>actuary</u> is performing <u>actuarial services</u> for a client who is not affiliated with the <u>actuary</u>.

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- 1.4.2. When a team is performing <u>actuarial services</u>, most paragraphs of the ISAP apply to every <u>actuary</u> on the team. However, requirements in some paragraphs need not be met by every <u>actuary</u> on the team personally (e.g., 2.1.1.). In the case of such paragraphs, each <u>actuary</u> on the team should identify, if relevant to that <u>actuary</u>'s <u>work</u>, which member of the team is responsible for complying with such requirements and be satisfied that the other team member accepts that responsibility.
- 1.4.3. When a team is performing <u>actuarial services</u>, the team leader takes overall responsibility for the team's work product. An <u>actuary</u> who is not the team leader (and hence does not control the team's work product) should treat the team leader as the user and interpret the ISAP within that context.
- 1.4.4. If an <u>actuary</u> is performing <u>actuarial services</u> for an affiliated party (either individually or as a member of a team), the <u>actuary</u> should interpret the ISAP in the context of practices that apply normally within or in relation to the affiliated party, except that, if there are substantive inconsistencies between these practices and the ISAP, the <u>actuary</u> should endeavour to observe the spirit and intent of the ISAP as fully as possible.
 - a. The <u>actuary</u> should consider the expectations of the <u>principal</u>. These expectations might suggest that it may be appropriate to omit some of the otherwise required content in a <u>report</u>. However, limiting the content of a <u>report</u> may not be appropriate if that <u>report</u> or the findings in that <u>report</u> may receive broad distribution.
 - b. If the <u>actuary</u> believes circumstances are such that including certain content in a <u>report</u> is not necessary or appropriate, the <u>actuary</u> should be prepared (if challenged by a professional actuarial body with jurisdiction over the <u>actuarial</u> <u>services</u>) to describe these circumstances and provide the rationale for limiting the content of that <u>report</u>.
- **1.5.** Reasonable Judgment The <u>actuary</u> should exercise reasonable judgment in applying any ISAP.
 - 1.5.1. A judgment is reasonable if it takes into account:
 - a. The spirit and intent of the ISAPs;
 - b. The type of assignment; and
 - c. Appropriate constraints on time and resources.
 - 1.5.2. Nothing in an ISAP should be interpreted as requiring work to be performed that is not proportionate to the scope of the decision or the assignment to which it relates and the benefit that <u>intended users</u> would be expected to obtain from the <u>work</u> (Principle of Proportionality).
 - 1.5.3. Any judgment required by the ISAP (including implicit judgment) is intended to be the <u>actuary</u>'s <u>professional judgment</u> unless otherwise stated.

1.6. Language

- 1.6.1. Some of the language used in all ISAPs is intended to be interpreted in a very specific way in the context of a decision of the <u>actuary</u>. In particular, the following words are to be understood to have the meanings indicated:
 - a. "Must" means that the indicated action is mandatory and failure to follow the indicated action will constitute a failure to comply with the ISAP, unless the departure is due to a conflict with <u>law</u> (1.3.1.) or code of professional conduct (1.3.2.).
 - b. "Should" (or "shall") means that, under normal circumstances, the <u>actuary</u> is expected to follow the indicated action, unless the departure is due to a conflict with <u>law</u> (1.3.1.) or code of professional conduct (1.3.2.). However, in all other cases, if following the indicated action would produce a result that would be inappropriate or would potentially mislead the <u>intended users</u> of the <u>actuarial</u> <u>services</u>, the <u>actuary</u> should depart from the guidance and disclose that fact and provide the reason for not following the indicated action as described in paragraph 1.3.3.
 - c. "May" means that the indicated action is not required, nor even necessarily expected, but in certain circumstances is an appropriate activity, possibly among other alternatives. Note that "might" is not used as a synonym for "may", but rather with its normal meaning.
 - d. "Any" (as in e.g. "any <u>report</u>") means all such items if they exist, while acknowledging they may not exist. Such a reference does not give rise to a requirement to create such an item.
- 1.6.2. ISAPs use various terms whose specific meanings are defined in the Glossary. These terms are highlighted in the text with a dashed underscore and in blue, which is also a hyperlink to the definition (e.g., <u>actuary</u>).
- 1.7. Cross-References When an ISAP refers to the content of another document, the reference relates to the referenced document as it is effective on the <u>adoption date</u> as shown on the cover page of the ISAP. If the referenced document is amended or restated after the <u>adoption date</u> of the ISAP, the <u>actuary</u> must consider the extent to which the guidance in the ISAP is still applicable and appropriate.
- **1.8.** Effective Date This ISAP is effective for {actuarial services performed/actuarial services commenced/actuarial services performed relevant to an event}¹ on or after [Date].

¹ Phrase to be selected and date to be inserted by standard-setter adopting or endorsing this ISAP.

Section 2. Appropriate Practices

2.1. Acceptance of Assignment

- 2.1.1. When providing <u>actuarial services</u>, the <u>actuary</u> should confirm with the <u>principal</u> the nature and scope of <u>actuarial services</u> to be provided, including:
 - a. The role of the <u>principal</u>;
 - b. Any limitations or constraints on the actuary;
 - c. Any requirements that the <u>actuary</u> is required to satisfy;
 - d. Identification of the schedule and expected cost or resources needed (especially if they are substantial); and
 - e. The information needed to be communicated to and by the <u>actuary</u>, especially if it is sensitive or confidential.
- 2.1.2. In accepting an assignment for <u>actuarial services</u>, the <u>actuary</u> shall:
 - a. *{If adopting standard-setter has a standard on qualifications}* Be qualified under *[name of standard]* to perform the services, or become qualified before the services are delivered;

{If adopting standard-setter does not have a standard on qualifications} Be competent and appropriately experienced to perform the services²;

- b. Be satisfied that the assignment can be performed under the applicable code of professional conduct; and
- c. Have reasonable assurance of time, resources, access to relevant employees and other relevant parties, access to documentation and information, and the right of the <u>actuary</u> to communicate information, as may be necessary for the <u>work</u>.
- 2.2. Knowledge of Relevant Circumstances The <u>actuary</u> should have or obtain sufficient knowledge and understanding of the <u>data</u> and other information available, including the relevant history, processes, nature of the business operations, <u>law</u>, and business environment of the subject of the <u>actuarial services</u>, to be appropriately prepared to perform the <u>actuarial services</u> required by the assignment.
- **2.3.** Reliance on Others The <u>actuary</u> may use information prepared by another party. This information may include <u>data</u>, opinions of other professionals, and supporting analyses (but excludes assumptions and methodology). The <u>actuary</u> may select the party and information on which to rely, or may be given the information by the <u>principal</u>. The <u>actuary</u> may take

 $^{^{2}}$ Adopting standard-setter to choose one of these two phrases as appropriate, insert the name of the qualification standard if applicable, and delete material between the $\{\}$.

responsibility for such information, or the <u>actuary</u> may state that reliance has been placed upon the source of this information and disclaim responsibility.

- 2.3.1. If the <u>actuary</u> selects the party on whom to rely, the <u>actuary</u> should consider the following:
 - a. The other party's qualifications;
 - b. The other party's competence, integrity, and objectivity;
 - c. The other party's awareness of how the information is expected to be used;
 - d. Discussions and correspondence between the <u>actuary</u> and the other party regarding any facts known to the <u>actuary</u> that are likely to have a material effect upon the information used; and
 - e. The need to review the other party's supporting documentation.
- 2.3.2. If the <u>actuary</u> uses information prepared by another party without disclaiming responsibility for that information, the <u>actuary</u>:
 - a. Should determine that the use of that information conforms to <u>accepted</u> <u>actuarial practice</u> in the jurisdiction(s) of the <u>actuary</u>'s services;
 - b. Should establish appropriate procedures for the management and review of the information that the <u>actuary</u> intends to use; and
 - c. Does not need to disclose the source of the information.
- 2.3.3. If the <u>actuary</u> states reliance on the information prepared by another party and disclaims responsibility for it, the <u>actuary</u> should:
 - a. Disclose in any <u>report</u> that fact (including identifying the other party);
 - b. Disclose in any <u>report</u> the nature and extent of such reliance;
 - c. Examine the information for evident shortcomings;
 - d. When practicable, review the information for reasonableness and consistency; and
 - e. Disclose in any <u>report</u> the steps, if any, that the <u>actuary</u> took to determine whether it was appropriate to rely on the information.
- 2.3.4. If the information was prepared by the other party under a different jurisdiction, the <u>actuary</u> should consider any differences in the <u>law</u> or <u>accepted actuarial practice</u> between the two jurisdictions and how that might affect the <u>actuary</u>'s use of the information.

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- 2.4. Materiality In case of omissions, understatements, or overstatements, the <u>actuary</u> should assess whether the effect is material. If the effect of any of these is material, the <u>actuary</u> should disclose this in any <u>report</u> to which it is relevant. The threshold of materiality under which the <u>work</u> is being conducted should be determined by the <u>actuary</u> unless it is imposed by another party such as an auditor or the <u>principal</u>. When determining the threshold of materiality, the <u>actuary</u> should:
 - 2.4.1. Assess materiality from the point of view of the <u>intended user</u>(s), recognizing the purpose of the <u>actuarial services</u>; thus, an omission, understatement, or overstatement is material if the <u>actuary</u> expects it to affect significantly either the <u>intended user</u>'s decision-making or the <u>intended user</u>'s reasonable expectations;
 - 2.4.2. Consider the actuarial services and the subject of those actuarial services; and
 - 2.4.3. Consult with the <u>principal</u> if necessary.

2.5. Data Quality

- 2.5.1. <u>Sufficient and Reliable Data</u> The <u>actuary</u> should consider whether sufficient and reliable <u>data</u> are available to perform the <u>actuarial services</u>. <u>Data</u> are sufficient if they include the appropriate information for the <u>work</u>. <u>Data</u> are reliable if they are substantially accurate. If sufficient and reliable <u>data</u> are not available, then the <u>actuary</u> should follow the guidance in paragraph 2.5.5. below.
- 2.5.2. <u>Data Validation</u> The <u>actuary</u> should take reasonable steps to review the consistency, completeness, and accuracy of the <u>data</u> used. These might include:
 - a. Undertaking reconciliations against audited financial statements, trial balances, or other relevant records, if these are available;
 - b. Testing the <u>data</u> for reasonableness against external or independent <u>data</u>;
 - c. Testing the <u>data</u> for internal consistency and consistency with other relevant information; and
 - d. Comparing the <u>data</u> to those for a prior period or periods.

The <u>actuary</u> should describe this review in any <u>report</u>.

- 2.5.3. <u>Sources of Data for Assumptions</u> To the extent possible and appropriate when setting assumptions, the <u>actuary</u> should consider using <u>data</u> specific to the organization or the subject of the <u>actuarial services</u>. Where such <u>data</u> are not available, relevant, or sufficiently credible, the <u>actuary</u> should consider industry <u>data</u>, <u>data</u> from other comparable sources, population <u>data</u>, or other published <u>data</u>, adjusted as appropriate. The <u>data</u> used, and the adjustments made, should be described in any <u>report</u>.
- 2.5.4. <u>Data Modification</u> The <u>actuary</u> should disclose any modification of <u>data</u> before its use (such as interpolation, extrapolation, adjustment, or discarding of outliers) in any <u>report</u>.

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- 2.5.5. <u>Deficiencies in Data</u> The <u>actuary</u> should consider the possible effect of any <u>data</u> deficiencies (such as inadequacy, inconsistency, incompleteness, inaccuracy, and unreasonableness) on the results of the <u>work</u>. If such deficiencies in the <u>data</u> are not likely to materially affect the results, then the deficiencies need not be considered further. If the <u>actuary</u> cannot find a satisfactory way to resolve the deficiencies, then the <u>actuary</u> should consider whether to:
 - a. Decline to undertake or continue to perform the <u>actuarial services</u>;
 - b. Work with the <u>principal</u> to modify the <u>actuarial services</u> or obtain appropriate additional <u>data</u> or other information; or
 - c. Subject to compliance with the <u>actuary</u>'s code of professional conduct, perform the <u>actuarial services</u> as well as possible, and disclose in any <u>report</u> the <u>data</u> deficiencies (including an indication of the potential impact of those <u>data</u> deficiencies).

2.6. Assumptions and Methodology

- 2.6.1. The assumptions and methodology may be
 - a. Set by the $\frac{\text{actuary}}{(2.7.)}$;
 - b. Prescribed by the <u>principal</u> or another party (2.8); or
 - c. Mandated by <u>law</u> (2.9.).
- 2.6.2. Where a <u>report</u> is silent about who set an assumption or methodology, the <u>actuary</u> who authored that <u>report</u> will be assumed to have taken responsibility for such assumption or methodology.
- **2.7.** Assumptions and Methodology Set by Actuary Where the <u>actuary</u> sets the assumptions and methodology, or the <u>principal</u> or another party sets an assumption or methodology that the <u>actuary</u> is willing to support:
 - 2.7.1. <u>Selection of Assumptions and Methodology</u> The <u>actuary</u> should select the assumptions and methodology that are appropriate for the <u>work</u>. The <u>actuary</u> should consider the needs of the <u>intended users</u> and the purpose of the <u>actuarial services</u>. In selecting assumptions and methodology, the <u>actuary</u> should consider the circumstances of the organization, the subject of the <u>actuarial services</u>, and the assignment, as well as relevant industry and professional practices. The <u>actuary</u> should consider to what extent it is appropriate to adjust assumptions or methodology to compensate for known deficiencies in the available <u>data</u>. The <u>actuary</u> should consider to what extent it is appropriate to use assumptions or methodology if they have a known significant bias to underestimation or overestimation of the result.
 - 2.7.2. <u>Appropriateness of Assumptions</u> The <u>actuary</u> should consider the appropriateness of the assumptions underlying each component of the methodology used. Assumptions generally involve significant <u>professional judgment</u> as to the appropriateness of the methodology used and the parameters underlying the application of such methodology. Assumptions may (if permitted in the

circumstances) be implicit or explicit and may involve interpreting past <u>data</u> and other information or projecting future trends.

- 2.7.3. <u>Margins for Adverse Deviations</u> In cases where unbiased calculations are not required, the <u>actuary</u> should consider to what extent it is appropriate to adjust the assumptions or methodology with margins for adverse deviations in order to allow for uncertainty in the underlying <u>data</u> and other information, assumptions, or methodology. The <u>actuary</u> should disclose any incorporation of margins for adverse deviations in assumptions or methodology in any <u>report</u>.
- 2.7.4. <u>Discontinuities</u> The <u>actuary</u> should consider the effect of any discontinuities in experience on assumptions or methodology. Discontinuities could result from:
 - a. Internal circumstances regarding the organization or subject of the <u>actuarial</u> <u>services</u> such as changes in an insurer's claims processing or changes in the mix of business; or
 - b. External circumstances impacting the organization or subject of the <u>actuarial</u> <u>services</u> such as changes in the legal, economic, legislative, regulatory, supervisory, demographic, technological, and social environments.
- 2.7.5. <u>Individual Assumptions and Aggregate Assumptions</u> The <u>actuary</u> should assess whether an assumption set is reasonable in the aggregate. While assumptions might be justifiable individually, it is possible that prudence or optimism in multiple assumptions will result in an aggregate assumption set that is no longer valid. If not valid, the <u>actuary</u> should make appropriate adjustments to achieve a reasonable assumption set and final result.
- 2.7.6. <u>Internal Consistency of Assumptions and Methodology</u> The <u>actuary</u> should determine if the assumptions and methodology used for different components of the <u>work</u> are materially consistent, and that any significant interdependencies are modelled appropriately. The <u>actuary</u> should disclose any material inconsistencies in any <u>report</u>.
- 2.7.7. <u>Alternative Assumptions and Sensitivity Testing</u> The <u>actuary</u> should consider and address the sensitivity of each methodology to the effect of variations in key assumptions, when appropriate. In determining whether sensitivity has been appropriately addressed, the <u>actuary</u> should take into account the purpose of the <u>actuarial services</u> and whether the results of the sensitivity tests reflect a reasonable range of variation in the key assumptions, consistent with that purpose.
- **2.8.** Assumptions and Methodology Prescribed (other than by Law) Where the assumptions or methodology are prescribed by the <u>principal</u> or another party:
 - 2.8.1. If the <u>actuary</u> is willing to support the prescribed assumption or methodology (following paragraph 2.7. as applicable), the <u>actuary</u> may disclose the party who prescribed the assumption or methodology and the <u>actuary</u>'s support in any <u>report</u>
 - 2.8.2. If the <u>actuary</u> is unwilling to support the prescribed assumption or methodology because:

- a. It significantly conflicts with what would be appropriate for the purpose of the actuarial services; or
- b. The <u>actuary</u> has been unable to judge the appropriateness of the prescribed assumption or methodology without performing a substantial amount of additional work beyond the scope of the assignment, or the <u>actuary</u> was not qualified to judge the appropriateness of the assumption;

then the <u>actuary</u> should disclose in any <u>report</u> that fact, the party who prescribed the assumption or methodology, and the reason why this party, rather than the <u>actuary</u>, set the assumption or methodology.

- 2.8.3. When the <u>principal</u> requests an additional calculation using an assumption set which the <u>actuary</u> does not judge to be reasonable for the purpose of the <u>actuarial services</u>, the <u>actuary</u> may provide the <u>principal</u> with the results based on such assumptions. If those results are communicated to any party other than the <u>principal</u>, the <u>actuary</u> should disclose in any <u>report</u> the source of those assumptions and the <u>actuary</u>'s <u>opinion</u> of their appropriateness.
- **2.9.** Assumptions and Methodology Mandated by Law When an assumption or methodology is mandated by law, the actuary should disclose in any report that the assumption or methodology was mandated by law and whether such assumption or methodology may limit the relevance of the work for other purposes.
- 2.10. Model Governance For the purpose of this paragraph and subparagraphs i. and j. of paragraph 3.2.2. "using" includes selecting, developing, modifying, and running models. This paragraph applies to all models used when performing actuarial services which support decision making. It provides guidance to actuaries on appropriate model governance to manage the risks inherent in using a model. Model governance is important for all models, from those using simple spreadsheets to those including complex simulations. The level of governance should be proportionate to the risk to the intended users as a result of an incorrect conclusion being drawn from the results of the model.

The <u>actuary</u> involved in using <u>models</u> should:

- 2.10.1. Be satisfied that the <u>model risks</u> have been identified, assessed, and that there are appropriate actions to mitigate these risks such as adequate model validation, documentation, and process controls.
- 2.10.2. Be satisfied that an appropriate model validation has taken place. The model validation includes assessments that:
 - a. The <u>model</u> reasonably fits its intended purpose. Items that the <u>actuary</u> should consider, if applicable, include the availability, granularity, and quality of <u>data</u> and inputs required by the <u>models</u>, the appropriateness of the relationships recognized, and the <u>model</u>'s ability to generate an appropriate range of results around expected values;
 - b. The <u>model</u> meets its specifications; and

c. The full or partial results of the <u>model</u> can be reproduced or any differences can be explained.

The model validation should be performed by individual(s) who did not develop the <u>model</u>, unless to do so imposes a burden that is disproportionate to the <u>model risk</u>.

- 2.10.3. Understand the <u>model</u>, the conditions under which it is appropriate for the <u>model</u> to be used including any limitations of the <u>model</u> for the intended use, the context in which the <u>model</u> will be used, how model inputs will be provided, and how the <u>actuary</u> expects the results of the <u>model</u> will be used. The <u>actuary</u> should disclose relevant limitations or uncertainties and their broad implications in any <u>report</u>.
- 2.10.4. Be satisfied that there is adequate documentation of the <u>model</u> design, construction, and operation and of the conditions under which it is appropriate to use the <u>model</u>, including any limitations of the <u>model</u>. This documentation should include, where appropriate, scope, purpose, methodology, statistical quality, calibration, and fitness for intended purpose, and reflect changes to the <u>model</u> (if any) made by the <u>actuary</u>.
- 2.10.5. Be satisfied that the <u>model</u> is subject to appropriate controls. This should typically include a change control process that:
 - a. Avoids unauthorized changes to the model:
 - b. Documents any changes made and any material impact on the model; and
 - c. Allows any changes to be reversed.
- 2.10.6. When the results or output of a <u>model</u> run are to be used:
 - a. Be satisfied that the conditions to use the <u>model</u> are met;
 - b. Be satisfied that there are appropriate controls on inputs and outputs of the model;
 - c. Consider whether the model validation described in paragraph 2.10.2. should be performed in whole or in part;
 - d. Understand, and where appropriate explain, material differences between different runs of the <u>model</u>, and be satisfied that there is an adequate control process for production runs. In the case of stochastic <u>models</u>, be satisfied that a sufficient number of runs of the <u>model</u> are made and understand the significant differences between different runs of the <u>model</u>;
 - e. Understand any management actions or responses assumed within the <u>model</u>. The <u>actuary</u> should disclose such management actions or responses assumed and their broad implications in any <u>report</u>; and
 - f. Document, where appropriate, limitations, inputs, key assumptions, intended uses, and model output.

2.11. Process Management

- 2.11.1. <u>Process Controls</u> The <u>actuary</u> should consider to what extent, if any, the procedures used to carry out the <u>work</u> should be controlled, and if so, how.
- 2.11.2. <u>Reasonableness Checks</u> The <u>actuary</u> should review the results produced by the selected assumptions and methodology for overall reasonableness.
- **2.12.** Peer Review The <u>actuary</u> should consider to what extent, if at all, it is appropriate for any <u>report</u> to be independently reviewed, in totality or by component, before the final <u>report</u> is delivered to the <u>principal</u> or distributed to the <u>intended users</u>. The purpose of peer review is to ensure the quality of a <u>report</u>, with the process tailored to the complexity of the <u>work</u> and the specific environment in which the <u>actuary</u> works. If a peer review is deemed to be appropriate:
 - 2.12.1. The <u>actuary</u> should select a reviewer who is independent of involvement with the specific component(s) reviewed and is knowledgeable and experienced in the practice area of the <u>actuarial services</u>.
 - 2.12.2. If the reviewer is an <u>actuary</u>, the reviewer should comply with the guidance in any applicable actuarial standard, in performing the review.
- **2.13. Treatment of Subsequent Events** The <u>actuary</u> should consider any <u>subsequent event</u> that has the potential of materially changing the results of the <u>actuarial services</u> if the event had been reflected in the <u>work</u> and disclose such an event in any <u>report</u>.

2.14. Retention of Documentation

- 2.14.1. The <u>actuary</u> should retain, for a reasonable period of time, sufficient documentation for purposes such as:
 - a. Peer review, regulatory review, and audit;
 - b. Compliance with <u>law;</u> and
 - c. Assumption of any recurring assignment by another <u>actuary</u>.
- 2.14.2. Documentation is sufficient when it contains enough detail for another <u>actuary</u> qualified in the same practice area to understand the <u>work</u> and assess the judgments made.
- 2.14.3. Nothing in any ISAP is intended to give any person access to material beyond the access that they are already authorized to have.

Section 3. Communication

- **3.1.** General Principles Any <u>communication</u> should be appropriate to the particular circumstances and take the skills, understanding, levels of relevant technical expertise, and needs of the <u>intended user</u> into consideration to allow the <u>intended user</u> to understand the implications of the <u>actuary</u>'s <u>communication</u>.
 - 3.1.1. <u>Form and Content</u> The <u>actuary</u> should determine the form, structure, style, level of detail, content, and relevant disclosures of each <u>communication</u> to be appropriate to the particular circumstances, taking into account the <u>intended users</u>.
 - 3.1.2. <u>Clarity</u> The <u>actuary</u> should word each <u>communication</u> to be clear and use language appropriate to the particular circumstances, taking into account the <u>intended users</u>.
 - 3.1.3. <u>Timing of Communication</u> The <u>actuary</u> should issue each <u>communication</u> within a reasonable time period. The timing of the <u>communication</u> should reflect any arrangements that have been made with the <u>principal</u>. The <u>actuary</u> should consider the needs of the <u>intended users</u> in setting the timing.
 - 3.1.4. <u>Identification of the Actuary</u> A <u>communication</u> shall clearly identify the issuing <u>actuary</u>. When two or more individuals jointly issue a <u>communication</u>, at least some of which is actuarial in nature, the <u>communication</u> shall identify all responsible <u>actuaries</u>, unless the <u>actuaries</u> judge it inappropriate to do so. The name of an organization with which each <u>actuary</u> is affiliated may also be included in the <u>communication</u>, but the <u>actuary</u>'s responsibilities are not affected by such identification. Unless the <u>actuary</u> judges it inappropriate, any <u>communication</u> shall also indicate to what extent and how supplementary information and explanation can be obtained from the <u>actuary</u> or another party.
- **3.2. Report** The <u>actuary</u> should complete a <u>report</u>, including relevant disclosures, unless any <u>intended users</u> will otherwise be adequately informed about the output of <u>actuarial services</u> (including access to the supporting information which is necessary to understand the outputs and disclosures). The <u>actuary</u> should present all information with sufficient detail that another <u>actuary</u> qualified in the same practice area could make an objective appraisal of the reasonableness of the <u>actuary</u>'s <u>work</u>.
 - 3.2.1. <u>Content</u> The <u>actuary</u> should include in any <u>report</u>, if applicable:
 - a. The scope and intended use of the <u>report;</u>
 - b. The output from the <u>actuarial services</u>, including the potential impact of variability on those outputs;
 - c. The methodology, assumptions, data and other information used;
 - d. Any restrictions on distribution;
 - e. The date of the <u>report</u>; and
 - f. Identification of the authorship of the <u>report</u>.
 - 3.2.2. <u>Disclosures</u> The <u>actuary</u> issuing a <u>report</u> should disclose in that <u>report</u>, if applicable:



International Actuarial Association Association Actuarielle Internationale

21 November 2019

ISAP 4 International Standard of Actuarial Practice 4

IFRS 17 Insurance Contracts

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Adopted by the IAA Council

21 November 2019



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Preface

This International Standard of Actuarial Practice (ISAP) is a model for actuarial standardsetting bodies to consider.

The International Actuarial Association (IAA) encourages relevant actuarial standard-setting bodies to maintain a standard or set of standards that is substantially consistent with this ISAP to the extent that the content of this ISAP is appropriate for <u>actuaries</u> in their jurisdiction. This can be achieved in many ways, including:

- Adopting this ISAP as a standard with only the modifications in the Drafting Notes;
- Customizing this ISAP by revising the text of the ISAP to the extent deemed appropriate by the standard-setting body while ensuring that the resulting standard or set of standards is substantially consistent with this ISAP;
- Endorsing this ISAP by declaring that this ISAP is appropriate for use in certain clearly defined circumstances;
- Modifying existing standards to obtain substantial consistency with this ISAP; or
- Confirming that existing standards are already substantially consistent with this ISAP.

A standard or set of standards that is promulgated by a standard-setting body may be considered to be substantially consistent with this ISAP if:

- There are no material gaps in the standard(s) in respect of the principles set out in this ISAP; and
- The standard or set of standards does not contradict this ISAP.

Local jurisdictions may adopt variants of <u>IFRS 17</u>, and in that case a local actuarial standard-setter may need to adjust ISAP 4 accordingly.

If an actuarial standard-setting body wishes to adopt or endorse this ISAP, it is essential to ensure that existing standards are substantially consistent with <u>ISAP 1</u> as this ISAP relies upon <u>ISAP 1</u> in many respects. Likewise, any customization of this ISAP, or modification of existing standards to obtain substantial consistency with this ISAP, should recognize the important fact that this ISAP relies upon <u>ISAP 1</u> in many respects.

If this ISAP is translated for the purposes of adoption, the adopting body should select three verbs that embody the concepts of "must", "should", and "may", as described in paragraph 1.6. Language of ISAP 1, even if such verbs are not the literal translation of "must", "should", and "may".

This ISAP is a model standard of actuarial practice and, as such, is not binding on any <u>actuary</u>.

This ISAP was adopted by the IAA Council in November 2019.

[Drafting Notes: When an actuarial standard-setting organization adopts this standard, it should:

- 1. Replace "ISAP" throughout the document with the local standard name, if applicable;
- 2. Modify references to <u>ISAP 1</u> in paragraphs 1.3., 2.1., 2.2.2., 2.3., 2.4., 2.5., 2.6.1., 2.6.14., and 3.1. to point to the local standard(s) that are substantially consistent with <u>ISAP 1</u>, rather than referring to <u>ISAP 1</u> directly, if appropriate;
- 3. Choose the appropriate phrase and date in paragraph 1.7.;

- 4. *Review this standard for, and resolve, any conflicts with the local <u>law</u> and code of <i>professional conduct; and*
- 5. Delete this preface (including these drafting notes) and the footnote associated with paragraph 1.7.]

Introduction

This International Standard of Actuarial Practice (ISAP) provides guidance to <u>actuaries</u> when performing <u>actuarial services</u> in connection with <u>International Financial Reporting Standard 17</u> Insurance Contracts (<u>IFRS 17</u>) issued in May 2017.

IFRS 17 Insurance Contracts establishes principles for the recognition, measurement, presentation and disclosure of <u>insurance contracts</u> and <u>reinsurance contracts</u>. The objective is to ensure that <u>entities</u> provide relevant information in a way that faithfully represents those contracts.

An <u>entity</u> which reports financial statements under <u>IFRS</u> is responsible for the information reported. This means it is responsible for, amongst other things, identification, combination, aggregation, separation, recognition and derecognition of contracts, the choice of measurement approach and assumptions, the measurement calculations and the disclosures in the <u>IFRS</u> financial statements.

Nevertheless, <u>actuaries</u> providing <u>actuarial services</u> in connection with <u>IFRS 17</u> may be advising the <u>entity</u> on decisions, carrying out the calculations required or some combination of these.

The IAA intends this ISAP to:

- Facilitate convergence in standards of actuarial practice in connection with IFRS 17;
- Increase public confidence in <u>actuarial services</u> provided in connection with <u>IFRS 17</u>; and
- Demonstrate the <u>IAA</u>'s commitment to support the work of the International Accounting Standards Board (IASB) in achieving high quality, transparent and comparable financial reporting internationally, as envisaged by the Memorandum of Understanding between the <u>IAA</u> and the IASB.

Section 1. General

- **1.1. Purpose** This ISAP provides guidance to <u>actuaries</u> when performing <u>actuarial services</u> in connection with <u>IFRS 17</u>. Its purpose is to increase <u>intended users</u>' confidence that:
 - <u>Actuarial services</u> are carried out professionally and with due care;
 - The results are relevant to their needs, are presented clearly and understandably, and are complete; and
 - The assumptions and methodology (including <u>models</u> and modelling techniques) used are disclosed appropriately.
- **1.2.** Scope This ISAP applies to <u>actuaries</u> when performing <u>actuarial services</u> related to <u>IFRS 17</u> for the preparation of an <u>entity</u>'s actual or pro-forma <u>IFRS</u> financial statements. <u>Actuaries</u> performing other <u>actuarial services</u> in connection with <u>IFRS 17</u> (for example: an <u>actuary</u> advising a third party such as an auditor or a regulator, or advising a potential buyer regarding an acquisition) should apply the guidance in this ISAP to the extent relevant to the assignment.
- **1.3.** Relationship to ISAP 1 Compliance with <u>ISAP 1</u> is a prerequisite to compliance with this ISAP.
- 1.4. Relationship to IFRSs This ISAP relates to the content of IFRS 17 and other relevant IFRSs, including any interpretations from the International Financial Reporting Interpretations Committee (IFRIC) or its predecessor, the Standing Interpretations Committee, as issued through 16 August 2019. The guidance in this ISAP complements the guidance in IFRS 17, which is not repeated in this ISAP.
- **1.5. Defined Terms** This ISAP uses various terms whose specific meanings are defined in the Glossary. These terms are highlighted in the text with a dashed underscore and in blue, which is a hyperlink to the definition (e.g., <u>actuary</u>).

This ISAP also uses key terms from <u>IFRS 17</u>, in which case they have the meaning as used in <u>IFRS 17</u>. These terms are highlighted in the text with a double underscore and in green (e.g., <u>insurance contract</u>).

- **1.6.** Cross References If IFRS 17, or any other IFRS referenced in this ISAP, is subsequently amended, restated, revoked or replaced by the IASB, or interpreted by IFRIC after 16 August 2019, the <u>actuary</u> should consider the extent to which guidance in this ISAP is still applicable and appropriate.
- 1.7. Effective Date This ISAP is effective for {actuarial services performed/actuarial services commenced/actuarial services performed with respect to IFRS financial statements for a reporting period ending}¹ on or after [Date].

¹ [Phrase to be selected and date to be inserted by standard-setter adopting or endorsing this ISAP.].

Section 2. Appropriate Practices

- **2.1.** Relevant Knowledge Requirements In applying <u>ISAP 1</u> paragraph 2.2.², the <u>actuary</u> should have or obtain sufficient knowledge and understanding of information necessary to perform the assignment, such as:
 - a. <u>IFRS 17</u>, applicable sections of other relevant <u>IFRSs</u> (e.g., IFRS 13 when measuring Fair Value), the <u>entity</u>'s <u>accounting policies</u> and the relevant processes that are applied in the preparation of <u>IFRS</u> financial statements;
 - b. The business environment in which the entity operates, including the financial market(s) from which it obtains <u>data;</u>
 - c. The <u>entity</u>'s appetite for risks that have an impact on the measurement under <u>IFRS 17</u>;
 - d. The <u>entity</u>'s products and operations;
 - e. The methodologies and assumptions used by the <u>entity</u> in other relevant contexts and the rationale for any differences;
 - f. How <u>law</u> affects the application of <u>IFRS 17</u>; and
 - g. The relevant auditing standards.
- **2.2.** Materiality The <u>actuary</u> should understand the distinction between materiality with respect to the <u>actuarial services</u>, the preparation of <u>IFRS</u> financial statements and the auditing of those financial statements.
 - 2.2.1. When appropriate for the <u>work</u>, the <u>actuary</u> should seek guidance from the <u>principal</u> or the <u>entity</u> regarding materiality.
 - 2.2.2. In applying <u>ISAP 1</u> paragraph 2.4.³, with respect to the preparation of <u>IFRS</u> financial statements the <u>actuary</u>'s threshold of materiality with respect to the <u>actuarial services</u> should not be greater than the <u>entity</u>'s threshold of materiality.
 - 2.2.3. In all following paragraphs of this ISAP, any use of "material" or "materiality" is with respect to the <u>actuarial services</u> carried out in accordance with this ISAP.
- 2.3. Proportionality In applying <u>ISAP 1</u> paragraph 1.5.⁴, and in particular paragraph 1.5.2., the actuary should take into account materiality. In addition, the degree of refinement in specific assumptions or methods recommended by the <u>actuary</u> should be proportionate to their possible impact on the results of the <u>actuarial services</u>.
- **2.4.** Identification, Combination, Aggregation, Separation, Recognition, Derecognition and Modification The <u>actuary</u> should treat the processes of:
 - a. Identification of <u>insurance contracts</u>;
 - b. Combination of <u>insurance contracts</u>;
 - c. Determination of the level of aggregation (refer to 2.6.14.);

² Knowledge of Relevant Circumstances

³ Materiality

⁴ Reasonable Judgment

- d. Separation of components from an <u>insurance contract</u> for treatment under a different standard;
- e. Separation of components of an <u>insurance contract</u> for different treatment under <u>IFRS</u> <u>17</u> (if and to the extent permitted);
- f. Recognition of groups of contracts and derecognition of insurance contracts; and
- g. Treatment of insurance contract modifications

as being subject to <u>ISAP 1</u> paragraph 2.7.⁵ or 2.8.⁶.

The <u>actuary</u> should disclose in the <u>report</u> changes in the above processes, including the rationale for and impact of the changes.

2.5. Measurement Approach – The <u>actuary</u> should treat the processes of selecting the appropriate measurement approach to be applied to each <u>group of insurance contracts</u>, whether it is the <u>general measurement approach</u>, the <u>premium allocation approach</u> (PAA) or the <u>variable fee approach</u>, as being subject to <u>ISAP 1</u> paragraph 2.7.⁵ or 2.8.⁶.

The <u>actuary</u> should disclose in the <u>report</u> changes in the above processes, including the rationale for and impact of the changes.

2.6. The General Measurement Approach

- 2.6.1. <u>General Approach for Selection of Assumptions</u> In applying <u>ISAP 1</u> paragraph 2.7.⁵, when advising the <u>principal</u> or the <u>entity</u> on actuarial assumptions, the <u>actuary</u> should consider matters such as:
 - a. Combining similar risks based on the nature of the insurance obligation, without being constrained by the actual grouping of <u>insurance contracts</u> that is used for measurement purposes;
 - b. Whether assumptions developed in other contexts, for example pricing assumptions, may be inappropriate for <u>IFRS 17</u> purposes;
 - c. Links as necessary to ensure consistency between assumptions (e.g., assumptions related to option exercise patterns should be linked to the economic scenarios);
 - d. The potential asymmetrical distribution of the current estimates (e.g., assumptions to deal with extreme events like tail events or options and guarantees that are triggered by market conditions);
 - e. The credibility of <u>data</u> when combining information from various sources or time periods; and
 - f. Long-term trends and seasonal variations, and other changes in the environment (e.g., applicable <u>law</u>, economic, demographic, technological and social).
- 2.6.2. <u>Process for Updating Assumptions</u> If the <u>actuary</u> considers it appropriate to change the process, including the methodology, used to update a recommended assumption,

⁵ Assumptions and Methodology Set by Actuary

⁶ Assumptions and Methodology Prescribed (other than by Law)
ISAP 4 – IFRS 17 Insurance Contracts

the <u>actuary</u> should discuss the change with the <u>principal</u>, including whether it would constitute a change in <u>accounting policy</u> or just a change in an accounting estimate as defined in International Accounting Standard 8 (IAS 8) *Accounting Policies*, *Changes in Accounting Estimates and Errors*.

The <u>actuary</u> should disclose in the <u>report</u> changes in such processes, including the rationale for and impact of the changes.

- 2.6.3. <u>Insurance Risk</u> When advising the <u>principal</u> or the <u>entity</u> on assumptions to measure <u>insurance risk</u>, the <u>actuary</u> should consider factors including the following:
 - a. Characteristics of the <u>insurance contract</u> including the risks being insured;
 - b. Characteristics of the policyholder and the way the contract was sold;
 - c. Past experience of incurred claims including patterns of delays in reporting and payment and the relevance to expected future experience; and
 - d. Practices of the <u>entity</u>, such as underwriting procedures and claims management.
- 2.6.4. <u>Policyholder Options</u> When advising the <u>principal</u> or the <u>entity</u> on assumptions for the exercise of options by policyholders, the <u>actuary</u> should consider factors such as the following:
 - a. Past experience of how policyholders have exercised options;
 - b. Likely behaviour of policyholders, taking into account factors such as <u>anti-</u> selection, the effects of non-financial considerations, and the relative advantages to the policyholder of exercising any options;
 - c. Characteristics of how the <u>insurance contracts</u> are sold and serviced;
 - d. Significant scheduled changes in premiums, charges, benefits or terms and conditions; and
 - e. Any short-term spikes in cancellation rates created by the exercise of certain options.
- 2.6.5. <u>Entity Discretion</u> When advising the <u>principal</u> or the <u>entity</u> on assumptions which consider the exercise of discretion by the <u>entity</u>, the <u>actuary</u> should take into account expectations or limitations that may arise from sources such as:
 - a. The <u>entity</u>'s marketing and promotional materials;
 - b. The <u>entity</u>'s past practices;
 - c. The <u>entity</u>'s current policy;
 - d. Market practices; and
 - e. Laws and rulings of relevant authorities.
- 2.6.6. <u>Reinsurance Contracts Held</u> When advising the <u>principal</u> or the <u>entity</u>, on the measurement of <u>reinsurance contracts</u> held, the <u>actuary</u> should:
 - a. When estimating amounts recoverable under multiple reinsurance arrangements, consider the order in which the <u>reinsurance contracts</u> apply;
 - b. When estimating non-recoverable amounts:

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- i. Consider the financial condition of the reinsurer, the existence of collateral and the extent to which default by one reinsurer may affect the amounts recoverable from other reinsurers; and
- ii. In the estimates of future cash flows to be received from <u>reinsurance</u> <u>contracts</u>, allow for the uncertainty caused by the potential of nonperformance by reinsurers;
- c. When estimating <u>fulfilment cash flows</u>, consider the extent to which each reinsurance counterparty exercises its control over recapture, cancellation or commutation to its advantage; and
- d. Consider the impact of reinstatement of <u>reinsurance contracts</u> following claims.
- 2.6.7. <u>Reinsurance Contracts Issued</u> When advising the <u>principal</u> or the <u>entity</u>, on the measurement of <u>reinsurance contracts</u> issued, the <u>actuary</u> should consider circumstances such as:
 - a. The expected behaviour with respect to the available options of the policyholders, the issuer of the underlying <u>insurance contracts</u> and all intermediate reinsurers;
 - b. The underwriting and management practices, including the underwriting for facultative placements, and the claim management processes impacting the reinsurance contracts issued;
 - c. Reinstatement of <u>reinsurance contracts</u> following claims; and
 - d. Default by the issuer of the underlying <u>insurance contracts</u> and all intermediate reinsurers.
- 2.6.8. <u>Currency Exchange</u> When advising the <u>principal</u> or the <u>entity</u> on the <u>estimation</u> of the <u>fulfilment cash flows</u> in multiple currencies, the <u>actuary</u> should reflect current market expectations of future currency exchange rates.
- 2.6.9. <u>Discount Rates</u> When advising the <u>principal</u> or the <u>entity</u> on the derivation of:
 - a. Discount rates for periods beyond those for which observable <u>data</u> from an active market are available, the <u>actuary</u> should consider how current rates are expected to evolve over time using the best information available in the circumstances, including such market prices as are observable;
 - b. Discount rates for cash flows of <u>insurance contracts</u>, that vary with the returns of the <u>entity</u>'s invested assets, the <u>actuary</u> should consider the <u>entity</u>'s investment policy, as applied in practice, taking into account the <u>entity</u>'s communications to various stakeholders and, where applicable, anticipated policyholder behaviour;
 - c. Illiquidity and credit or default adjustments for determining the discount rates, the <u>actuary</u> should consider:
 - i. Approaches that are robust and that should be able to be applied reliably over time and under a variety of market conditions, to reflect the illiquidity of the cashflows underlying the relevant liabilities; and
 - ii. The possible methods for calculating such adjustments to observed market rates. Methods include market-based techniques, structural model techniques and expected / unexpected credit loss techniques.

- 2.6.10. <u>Contracts with Cash Flows that Vary with Returns on Underlying Items</u> When advising the <u>principal</u> or the <u>entity</u> on contracts whose cash flows vary with returns on <u>underlying items</u>, the <u>actuary</u> should:
 - a. Select discount rates used to calculate the present value of the cash flows to measure the <u>fulfilment cash flows</u> that are consistent with the investment returns anticipated in the estimates of the future cash flows. Returns on assets should be estimated using prospective expectations consistent with current market expectations of future economic conditions; and
 - b. For cash flows which are subject to a floor or a cap, consider the associated impact, if any, on the estimates of future cash flows, the <u>risk adjustment for</u> <u>non-financial risk</u> and the discount rates in the projection.
- 2.6.11. <u>Maintenance Expenses</u> When advising the <u>principal</u> or the <u>entity</u> on the estimation of cash flows for maintenance expenses such as policy administration and claim handling costs, and attributable overheads, the <u>actuary</u> should consider factors such as:
 - a. The <u>entity</u>'s cost-accounting and expense allocation policies;
 - b. Expenses expected to arise from fulfilling insurance obligations existing on the <u>measurement date</u>. This estimate should consider factors such as the <u>entity</u>'s past experience and current business plans, and the impact of future inflation; and
 - c. Terms of any outsourcing arrangements.
- 2.6.12. <u>Insurance Acquisition Cash Flows</u> The <u>actuary</u> should be satisfied that the allocation of <u>insurance acquisition cash flows</u> to each <u>portfolio of insurance contracts</u> is made on a consistent basis.
- 2.6.13. <u>Risk Adjustment for Non-Financial Risk</u> When advising the <u>principal</u> or the <u>entity</u> on the <u>risk adjustment for non-financial risk</u>, the <u>actuary</u> should:
 - a. Understand the <u>non-financial risk</u> inherent in the <u>insurance contracts</u>;
 - b. In assessing what the <u>entity</u> requires as compensation for bearing the <u>non-</u><u>financial risk</u>:
 - i. Reflect the diversification benefit that the <u>entity</u> recognizes at the relevant level of consolidation; and
 - ii. Consider sources of relevant information, such as the <u>entity</u>'s capital management, risk management and pricing policies.
 - c. Select a methodology that, at the chosen level of aggregation:
 - i. Uses assumptions that are consistent with those used in the determination of the corresponding estimates of future cash flows;
 - ii. Reflects the risk differences between the <u>portfolios of insurance</u> <u>contracts</u>; and
 - iii. Allows for the diversification that the entity recognizes.
 - d. Make appropriate allowance for mechanisms that result in risk being passed to the policyholder (e.g., contracts with participation or adjustment features);

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- e. Consider whether the difference between the total of the calculated gross <u>risk</u> <u>adjustment for non-financial risk</u> and the total of the ceded <u>risk adjustment for</u> <u>non-financial risk</u> fairly reflects the compensation that the <u>entity</u> requires for bearing the uncertainty of its net exposure; and
- f. When advising on the confidence level disclosure required by <u>IFRS 17</u>, where <u>risk adjustment for non-financial risk</u> has not been determined using a confidence level approach, consider:
 - i. The ability to diversify <u>non-financial risk</u> over the <u>entity</u>'s consolidated business; and
 - ii. The inherent uncertainty in the translation to a confidence level and the need to describe such uncertainty in the <u>report</u>.
- 2.6.14. <u>Aggregation and Contractual Service Margin (CSM)</u> The <u>actuary</u> should treat the processes of:
 - a. Identification of portfolios of insurance contracts;
 - b. Allocation of individual <u>insurance contracts</u> into <u>portfolios of insurance</u> <u>contracts</u>, and division of each <u>portfolio of insurance contracts</u> into <u>groups of</u> <u>insurance contracts</u>;
 - c. Treatment of the <u>loss component</u> on <u>onerous contracts</u>;
 - d. Determination of the <u>coverage units</u>; and
 - e. Roll forward of the <u>CSM</u>

as being subject to <u>ISAP 1</u> paragraph 2.7.⁵ or 2.8.⁶.

The <u>actuary</u> should disclose in the <u>report</u> changes in the above processes, including the rationale for and impact of the changes.

- **2.7.** The Premium Allocation Approach (PAA) When advising the <u>principal</u> or the <u>entity</u> in relation to the use of the <u>PAA</u> for a <u>group of insurance contracts</u>, the <u>actuary</u> should:
 - 2.7.1. At initial recognition if the <u>coverage period</u> is longer than one year, consider:
 - a. Differences between the expected patterns of insurance revenue under the general measurement approach and under the <u>PAA</u>;
 - b. Differences between the expected timing of cash flows under the <u>general</u> <u>measurement approach</u> and the insurance revenue under the <u>PAA</u>, resulting in different adjustments for the time value of money; and
 - c. Whether future assumption changes under the <u>general measurement approach</u> would render the simplification invalid

when assessing whether material differences between the respective carrying amounts of the liabilities for remaining coverage under the <u>PAA</u> and the <u>general</u> <u>measurement approach</u> are reasonably expected to arise;

- 2.7.2. Assess whether <u>insurance contracts</u> in the group have a significant financing component, advise the <u>principal</u> or the <u>entity</u>, and measure the liability accordingly;
- 2.7.3. Be aware of whether the <u>entity</u> has chosen in accordance with <u>IFRS 17</u> to recognize <u>insurance acquisition cash flows</u> as expenses when it incurs those costs and determine the liability in accordance with the <u>entity</u>'s choice;

- 2.7.4. Be aware of whether the <u>entity</u> has chosen to reflect the time value of money and the effect of financial risk, when not required to do so, and determine the liability in accordance with the <u>entity</u>'s choice; and
- 2.7.5. Consider whether facts and circumstances indicate that the <u>group of insurance</u> <u>contracts</u> is or has become <u>onerous</u> and advise the <u>principal</u> or the <u>entity</u> accordingly.
- **2.8.** The Variable Fee Approach In using the <u>variable fee approach</u>, the <u>actuary</u> should apply the guidance in paragraph 2.6., except for 2.6.6. (<u>Reinsurance Contracts</u> Held) and 2.6.7. (<u>Reinsurance Contracts</u> Issued), as the <u>variable fee approach</u> does not apply to reinsurance.

2.9. Financial Statement Presentation and Disclosure

- 2.9.1. Where the information provided by the <u>actuary</u> will be used in financial statement presentation and disclosure:
 - a. The <u>actuary</u> should provide the related information needed to comply with the relevant presentation and disclosure requirements of <u>IFRS 17</u> and the <u>entity</u>'s <u>accounting policies</u>; and
 - b. If the <u>actuary</u> becomes aware that such information is used in the presentations and/or disclosures incorrectly or inappropriately, the <u>actuary</u> should discuss and report these issues to the <u>principal</u>.
- 2.9.2. In providing advice on the disclosures of reconciliations where the order of calculations alters the information disclosed, the <u>actuary</u> should apply a consistent order of calculation across all reconciliations and from period to period, or disclose any change, including the rationale for and impact of the change, in the <u>report</u>.
- **2.10.** Transition When advising the <u>principal</u> or the <u>entity</u> on whether a full retrospective application of <u>IFRS 17</u> at transition is impracticable, the <u>actuary</u> should take into consideration factors such as:
 - a. The availability and integrity of the past <u>data</u> that are required to determine the <u>fulfilment cash flows</u>;
 - b. The availability and integrity of information on past products;
 - c. The availability, without the benefit of hindsight, of sufficient <u>data</u> to determine the initial assumptions and subsequent changes that the <u>entity</u> would have adopted over the lifetime of the <u>insurance contracts</u>;
 - d. The method that would have been used to adjust past known interest rates to achieve the rates that reflect the characteristics of the <u>insurance contracts</u>; and
 - e. The difficulty, without the benefit of hindsight, in evaluating the past <u>risk</u> <u>adjustment for non-financial risk</u> and the <u>entity</u>'s use of discretion.

Section 3. Communication

- **3.1. Disclosures** In addition to complying with <u>ISAP 1</u> Section 3. Communication, the <u>actuary</u> should disclose in the <u>report</u>:
 - 3.1.1. Information regarding a change in assumptions or method, whether arising from a consistent or changed process;
 - 3.1.2. Changes in processes, together with the rationale for and impact of the changes, related to:
 - a. The identification, combination, aggregation, separation, recognition, derecognition and modification (2.4.);
 - b. The selection of the measurement approach (2.5.);
 - c. The process for updating assumptions (2.6.2.);
 - d. Aggregation and \underline{CSM} (2.6.14.); and
 - e. The order of calculation on reconciliations provided for financial statement presentation and disclosure (2.9.2.); and
 - 3.1.3. When the <u>risk adjustment for non-financial risk</u> has not been determined using a confidence level approach, the uncertainty inherent in the translation to a confidence level (2.6.13.f.).



International Actuarial Association Association Actuarielle Internationale

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ISAP 5

International Standard of Actuarial Practice 5

Insurer Enterprise Risk Models

ISAP 5

International Standard of Actuarial Practice 5 Insurer Enterprise Risk Models

Adopted by the IAA Council 21 November 2016 Conformance changes adopted 1 December 2018



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Preface

This International Standard of Actuarial Practice (ISAP) is a model for actuarial standardsetting bodies to consider.

The International Actuarial Association (IAA) encourages relevant actuarial standard-setting bodies to maintain a standard or set of standards that is substantially consistent with this ISAP to the extent that the content of this ISAP is appropriate for <u>actuaries</u> in their jurisdiction. This can be achieved in many ways, including:

- Adopting this ISAP as a standard with only the modifications in the Drafting Notes;
- Customizing this ISAP by revising the text of the ISAP to the extent deemed appropriate by the standard-setting body while ensuring that the resulting standard or set of standards is substantially consistent with this ISAP;
- Endorsing this ISAP by declaring that this ISAP is appropriate for use in certain clearly defined circumstances;
- Modifying existing standards to obtain substantial consistency with this ISAP; or
- Confirming that existing standards are already substantially consistent with this ISAP.

A standard or set of standards that is promulgated by a standard-setting body may be considered to be substantially consistent with this ISAP if:

- There are no material gaps in the standard(s) in respect of the principles set out in this ISAP; and
- The standard or set of standards does not contradict this ISAP.

If an actuarial standard-setting body wishes to adopt or endorse this ISAP, it is essential to ensure that existing standards are substantially consistent with <u>ISAP 1</u> as this ISAP relies upon <u>ISAP 1</u> in many respects. Likewise, any customization of this ISAP, or modification of existing standards to obtain substantial consistency with this ISAP, should recognize the important fact that this ISAP relies upon <u>ISAP 1</u> in many respects.

If this ISAP is translated for the purposes of adoption, the adopting body should select three verbs that embody the concepts of "must", "should", and "may", as described in paragraph 1.6. Language of <u>ISAP 1</u>, even if such verbs are not the literal translation of "must", "should", and "may".

ISAPs are model standards of actuarial practice and, as such, are not binding on any <u>actuary</u>.

ISAP 5 was adopted by the <u>IAA</u> Council in November 2016. This conforming version was adopted on 1 December2018.

[Drafting Notes: when an actuarial standard-setting organization adopts this standard it should:

- 1. Replace "ISAP" throughout the document with the local standard name, if applicable;
- 2. Modify references to <u>ISAP 1</u> in paragraphs 1.3., 2.3.52.2., 2.3.1., and 3.1. to point to the local standard(s) that are substantially consistent with <u>ISAP 1</u>, rather than referring to <u>ISAP 1</u> directly, if appropriate;
- 3. Choose the appropriate phrase and date in paragraph 1.5.;
- 4. *Review this standard for, and resolve, any conflicts with the local <u>law</u> and code of <i>professional conduct; and*
- 5. Delete this preface (including these drafting notes) and the footnote associated with paragraph 1.5]

Introduction

This International Standard of Actuarial Practice (ISAP) provides guidance to <u>actuaries</u> when performing <u>actuarial services</u> involving the use of <u>enterprise risk models</u> for insurers.

<u>Actuaries</u> play a principal role in assuring financial soundness of insurers, and their approach often includes the use of <u>enterprise risk models</u>. Specifically, the central importance of <u>enterprise risk</u> <u>models</u> to insurance business management is clearly demonstrated in two of the Insurance Core Principles (ICP) published by the IAIS for assessment and supervision purposes: ICP 16 – Enterprise Risk Management for Solvency Purposes and ICP 17 – Capital Adequacy.

Increasingly, boards and senior managers of insurers rely on enterprise risk modelling for both regulatory and management decision-making purposes. As a result, insurers, their stakeholders, and other interested parties have a strong interest in the reliable operation and transparent governance of the use of <u>enterprise risk models</u>. As employees or advisors, <u>actuaries</u> play an important role in advising insurers and others on the development or selection of the appropriate <u>models</u> and the related testing, validation, and interpretation of the outcomes.

This ISAP is intended to:

- Facilitate convergence in standards of actuarial practice in connection with insurer <u>enterprise risk models</u> within and across jurisdictions;
- Increase public confidence in <u>actuarial services</u> for enterprise risk management (ERM) purposes; and
- Demonstrate the <u>IAA</u>'s commitment to supporting the work of the IAIS in achieving effective insurer ERM practice internationally.

Section 1. General

- 1.1. **Purpose** This ISAP provides guidance to <u>actuaries</u> when performing <u>actuarial</u> <u>services</u> involving <u>enterprise risk models</u> for insurers. It is expected to help increase public confidence in the ERM work provided by <u>actuaries</u> by giving <u>intended users</u> confidence that:
 - Actuarial services are carried out professionally and with due care;
 - The results are relevant to their needs, are presented clearly and understandably, and are complete; and
 - The assumptions and methodology (including, but not limited to, <u>models</u> and modelling techniques) used are disclosed appropriately.
- **1.2.** Scope This standard applies to <u>actuaries</u> when performing <u>actuarial services</u> involving the selection, modification, development, and use of <u>enterprise risk models</u>, including <u>stress tests</u> and <u>scenario tests</u>, to assess solvency, assess capital adequacy, and produce risk metrics for ERM programs of insurers.
- **1.3.** Relationship to ISAP 1 Compliance with <u>ISAP 1</u> is a prerequisite to compliance with this ISAP. References in <u>ISAP 1</u> to "this ISAP" should be interpreted as applying equally to this ISAP 5, where appropriate.
- **1.4. Defined Terms** This ISAP uses various terms whose specific meanings are defined in the Glossary. These terms are highlighted in the text with a dashed underscore and in blue, which is a hyperlink to the definition (e.g., <u>actuary</u>).
- **1.5.** Effective Date This ISAP is effective for {actuarial services performed/actuarial services commenced/actuarial services performed for a valuation date}¹ on or after [Date].

¹ [Phrase to be selected and date to be inserted by standard-setter adopting or endorsing this ISAP.].

Section 2. Appropriate Practices

- 2.1. Understanding of Risk and Uncertainty The <u>actuary</u> should have, or obtain, sufficient understanding of the nature of risk and uncertainty in relation to the subject of the <u>work</u>. In performing services related to risk assessment, the <u>actuary</u> should consider, or may rely on others who have appropriately considered, the following:
 - 2.1.1. Information about the financial strength, risk profile, business management, and risk environment of the insurer that is relevant to the assignment;
 - 2.1.2. Information about the insurer's own risk management framework and approach, including its attitude to the assumption of risk as relevant to the assignment; and
 - 2.1.3. The relationship between the insurer's financial strength, risk profile, business management, and risk environment as identified in 2.1.1. above, and the insurer's risk management framework and approach as identified in 2.1.2. above. If, in the <u>actuary</u>'s <u>professional judgment</u>, a significant inconsistency exists, then that inconsistency should be reflected in the risk assessment and disclosed.
- **2.2. Proportionality** In applying <u>ISAP 1</u> paragraph 1.5. Reasonable Judgment, and in particular paragraph 1.5.2., the <u>actuary</u> should also consider proportionality in respect of the nature, scale and complexity of the underlying risks.

2.3. Assumption Setting

- 2.3.1. When choosing or advising on the choice of assumptions for inclusion in the insurer enterprise risk model, in addition to following ISAP 1 paragraphs 2.7. Assumptions and Methodology Set by Actuary and 2.8. Assumptions and Methodology Prescribed, the actuary should consider factors including, but not limited to, the following:
 - a. Internal policies, likely management actions, and experience with past history of management actions;
 - b. Contractual requirements, policy wording, and past experience;
 - c. Factors outside of management control, such as policyholder behaviour, taxation, regulatory requirements, and reserving requirements; and
 - d. Risk mitigation techniques, such as reinsurance and hedging, and any limitations to these techniques.

The <u>actuary</u>'s assumptions should normally reflect the actual situation as of the <u>valuation date</u>, modified for any known or expected future changes.

- 2.3.2. When constructing or advising on the construction of insurer <u>enterprise risk models</u>, the <u>actuary</u> should be satisfied that the assumptions are reasonable by obtaining and reviewing information from appropriate sources, such as:
 - a. Management of the insurer being modelled;
 - b. Knowledgeable persons at the insurer;
 - c. The insurer's business plan and, if available, the most recent assessment of how the insurer will function under severely adverse scenarios;
 - d. External industry experts;
 - e. Requirements of <u>law;</u> and

- f. Other subject matter experts.
- 2.3.3. When probability distributions are incorporated into a <u>model</u>, the <u>actuary</u> should be satisfied that the assumed distributions and correlations are appropriate relative to historical information and anticipated future changes, and should also consider the possibility of plausible extreme values. In this regard, for each risk factor, the <u>actuary</u> should provide an explanation of the differences between the incidence of actual extreme events included in the historical <u>data</u> and the potential incidence of extreme events in the <u>enterprise risk model</u>. The various probability distributions and correlations should recognize the possibility of simultaneous extreme values from multiple risk factors.

2.4. Stress Testing and Scenario Testing

- 2.4.1. In relation to stress tests or scenario tests, the actuary should disclose:
 - a. The significant assumptions used in the <u>stress test</u> or the <u>scenario test</u>, including the actions assumed to be taken by management; and
 - b. Any known limitations of the <u>stress test</u> or the <u>scenario test</u> and include an assessment of the potential impact of these limitations on results.
- **2.5.** Assessing Consistency Among Models Multiple <u>models</u> and multiple <u>stress tests</u> or <u>scenario tests</u> are often developed for different purposes for the same insurer (e.g., accounting requirements, regulatory valuation, or risk evaluation to determine capital needs).

Where practical, the <u>actuary</u> should assess the reasons for and the impact of using multiple <u>models</u> and multiple <u>stress tests</u> or <u>scenario tests</u> and provide an explanation of any material differences in results.

Section 3. Communication

- **3.1. Disclosures** In addition to complying with <u>ISAP 1</u> Section 3. Communication, the <u>actuary</u> should disclose:
 - 3.1.1. Any significant inconsistency that exists between the insurer's financial strength, risk profile, business management, and risk environment as identified in 2.1.1. and the insurer's own risk management framework and approach as identified in 2.1.2. (2.1.3.);
 - 3.1.2. An explanation of the differences between experience <u>data</u> and potential extreme adverse values in the risk <u>model</u> (2.3.3.);
 - 3.1.3. An explanation of the differences between the experience <u>data</u> and the incidence of multiple extreme events in the <u>enterprise risk model</u> (2.3.3.);
 - 3.1.4. The significant assumptions used in the <u>stress test</u> or <u>scenario test</u>, including the actions assumed to be taken by management (2.4.1.a.);
 - 3.1.5. Any known limitations of the <u>stress tests</u> or <u>scenario tests</u> and an assessment of the potential impact of these limitations on results (2.4.1.b.); and
 - 3.1.6. An appropriate explanation of any material differences in results if multiple <u>models</u> and multiple <u>stress tests</u> and <u>scenario tests</u> are used by the insurer (2.5.).



International Actuarial Association Association Actuarielle Internationale

ISAP 6

International Standard of Actuarial Practice 6

Enterprise Risk Management Programs and IAIS Insurance Core Principles

1 December 2018

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Enterprise Risk Management Programs and IAIS Insurance Core Principles

Adopted by the IAA Council

1 December 2018



International Actuarial Association Association Actuarielle Internationale

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Preface

This International Standard of Actuarial Practice (ISAP) is a model for actuarial standardsetting bodies to consider.

The International Actuarial Association (IAA) encourages relevant actuarial standard-setting bodies to maintain a standard or set of standards that is substantially consistent with this ISAP to the extent that the content of this ISAP is appropriate for actuaries in their jurisdiction. This can be achieved in many ways, including:

- Adopting this ISAP as a standard with only the modifications in the Drafting Notes; •
- Customizing this ISAP by revising the text of the ISAP to the extent deemed • appropriate by the standard-setting body while ensuring that the resulting standard or set of standards is substantially consistent with this ISAP;
- Endorsing this ISAP by declaring that this ISAP is appropriate for use in certain clearly • defined circumstances:
- Modifying existing standards to obtain substantial consistency with this ISAP; or •
- Confirming that existing standards are already substantially consistent with this ISAP.

A standard or set of standards that is promulgated by a standard-setting body may be considered to be substantially consistent with this ISAP if:

- There are no material gaps in the standard(s) in respect of the principles set out in this • ISAP; and
- The standard or set of standards does not contradict this ISAP.

If an actuarial standard-setting body wishes to adopt or endorse this ISAP, it is essential to ensure that existing standards are substantially consistent with ISAP 1 as this ISAP relies upon ISAP 1 in many respects. Likewise, any customization of this ISAP, or modification of existing standards to obtain substantial consistency with this ISAP, should recognize the important fact that this ISAP relies upon ISAP 1 in many respects.

If this ISAP is translated for the purposes of adoption, the adopting body should select three verbs that embody the concepts of "must", "should", and "may", as described in paragraph 1.6. Language of ISAP 1, even if such verbs are not the literal translation of "must", "should", and "may".

ISAPs are model standards of actuarial practice and, as such, are not binding on any actuary.

This ISAP was adopted by the IAA Council on 1 December 2018.

[Drafting Notes: when an actuarial standard-setting organization adopts this standard, it should:

- *Replace "ISAP" throughout the document with the local standard name, if applicable;* 1.
- Modify references to ISAP 1 in paragraphs 1.3., 2.2. and 3.1. to point to the local 2. standard(s) that are substantially consistent with ISAP 1 rather than referring to ISAP 1 *directly, if appropriate;*
- *Modify the reference to <u>ISAP 5</u> in the Introduction, if appropriate;* 3.
- *Choose the appropriate phrase and date in paragraph 1.6.;* 4.
- *Modify the references to regulations consistent with ICP 8 and ICP 16, if appropriate;* 5.

- 6. *Review this standard for, and resolve, any conflicts with the local <u>law</u> and code of <i>professional conduct; and*
- 7. Delete this preface (including these drafting notes) and the footnote associated with paragraph 1.6.]

Introduction

This International Standard of Actuarial Practice (ISAP) provides guidance to <u>actuaries</u> who provide <u>actuarial services</u> involving enterprise risk management (ERM) programs that address insurer risks and are within the scope of regulations consistent with two of the Insurance Core Principles (ICP 8 and ICP 16) of the International Association of Insurance Supervisors (IAIS). Regulation of financial services businesses has evolved rapidly in the years following the Global Financial Crisis in 2008. While the most radical changes have been applied to banks, insurers have also been subject to enhanced scrutiny. An important component of this higher level of regulation is the assessment of ERM programs.

ERM programs include processes undertaken by insurers to identify, assess, measure, control, mitigate, monitor and communicate on risks in respect of the insurance enterprise. These programs have come to be seen by insurance supervisors globally as a critical activity of insurers. The IAIS has recognized the importance of ERM programs in two of the Insurance Core Principles (ICPs): ICP 8 Risk Management and Internal Controls and ICP 16 Enterprise Risk Management for Solvency Purposes. These ICPs are intended to encourage insurance supervisors around the world to incorporate the concepts expressed therein into the regulation of insurers. According to ICP 8 and ICP 16, an insurer's management is responsible for establishing and operating frameworks to manage the risks to which the insurer is exposed, recognising that the intrinsic nature of insurance is to share or to manage risk.

Depending on the level of sophistication, insurers' approaches to risk management may range from simple consideration of the adequacy of current financial resources to integrated holistic consideration and management of a wide range of risks. ICP 8 and ICP 16 encourage a supervisory-led minimum standard for these activities. Insurers, their stakeholders and supervisors all therefore have a strong interest in the reliable operation and transparent governance by insurers of an effective risk management system. The risk management system envisaged by ICP 8 and ICP 16 includes the identification and measurement of risks, a risk management policy including an explicit Asset and Liability Management (ALM) policy, investment policy and underwriting risk policy, the development and maintenance of a risk tolerance framework, and the Own Risk and Solvency Assessment (ORSA).

Many <u>actuaries</u> perform <u>actuarial services</u> in connection with ERM programs, including acting as an employee of an insurer, as an independent professional, as part of an external audit team or as a supervisor of insurers. In some jurisdictions, <u>actuaries</u> are called upon to give a professional <u>opinion</u> regarding the ERM program to the supervisor.

This ISAP addresses ERM programs that often involve <u>stress testing</u>, <u>scenario testing</u> and other modeling techniques. <u>ISAP 5</u> (Insurer Enterprise Risk Models) provides helpful guidance on these subjects and <u>actuaries</u> reading this ISAP may find <u>ISAP 5</u> to be a valuable resource.

Some terms, such as risk appetite, risk tolerance or risk limit, are used both in this ISAP and in ICP 8 and ICP 16. When such terms are referenced without definition in this ISAP or in the associated Glossary, they are intended to have the meaning in the context with which they are used in ICP 8 and ICP 16.

This ISAP is intended to:

- Facilitate convergence in standards of actuarial practice within and across jurisdictions in connection with ERM programs that are within the scope of regulations consistent with ICP 8 and ICP 16;
- Increase public confidence in <u>actuarial services</u> for ERM purposes; and

• Demonstrate the <u>IAA</u>'s commitment to supporting the work of the IAIS in achieving effective ERM programs for insurers internationally.

Section 1. General

- 1.1. Purpose This ISAP provides guidance to <u>actuaries</u> when performing <u>actuarial</u> <u>services</u> involving ERM programs that are within the scope of regulations consistent with two of the ICPs of the International Association of Insurance Supervisors, namely Risk Management and Internal Controls (ICP 8) and Enterprise Risk Management for Solvency Purposes (ICP 16). It is expected to help increase public confidence in the ERM <u>work</u> provided by <u>actuaries</u> by giving <u>intended users</u> confidence that:
 - <u>Actuarial services</u> are carried out professionally and with due care;
 - The results are relevant to their needs, are presented clearly and understandably, and are complete; and
 - The assumptions and methodology used are disclosed appropriately.
- **1.2.** Scope This ISAP applies to <u>actuaries</u> when performing <u>actuarial services</u> with responsibility for, or significant involvement in, the development, implementation, maintenance or review of some or all of the components of ERM programs, including ORSA, that are within the scope of regulations consistent with ICP 8 and ICP 16. This ISAP applies to an <u>actuary</u> only to the extent of the <u>actuary</u>'s responsibility and involvement.
- **1.3.** Relationship to ISAP 1 Compliance with <u>ISAP 1</u> is a prerequisite to compliance with this ISAP. References in <u>ISAP 1</u> to "this ISAP" should be interpreted as applying equally to this ISAP 6, where appropriate.
- **1.4. Defined Terms** This ISAP uses various terms whose specific meanings are defined in the Glossary. These terms are highlighted in the text with a dashed underscore and in blue, which is a hyperlink to the definition (e.g., <u>actuary</u>).
- **1.5.** Cross-References When this ISAP refers to the content of another document, the reference relates to the referenced document as it is effective on the <u>adoption date</u> as shown on the cover page of this ISAP. The referenced document may be amended, restated, revoked, or replaced after the <u>adoption date</u>. In such a case, the <u>actuary</u> should consider the extent the modification is applicable and appropriate to the guidance in this ISAP.
- **1.6.** Effective Date This ISAP is effective for {actuarial services performed/actuarial services commenced}¹ on or after [Date].

¹ [Phrase to be selected and date to be inserted by standard-setter adopting or endorsing this ISAP.].

Section 2. Appropriate Practices

- 2.1. Understanding of Insurer's Risk Management System and ERM Framework The <u>actuary</u> should have, or obtain, sufficient understanding of the risk management system and ERM framework of the insurer and should consider whether the risk management elements required by regulations consistent with ICP 8 and ICP 16 are in place, including risk management policies, risk tolerance statements, an ORSA, and the insurer's assessment of its regulatory capital requirements.
- **2.2. Proportionality** In applying <u>ISAP 1</u> paragraph 1.5.2., the <u>actuary</u> should also consider proportionality in respect of the nature, scale and complexity of the underlying risks.
- 2.3. Identification, Assessment and Management of Insurer Risks for an ERM Program
 - 2.3.1. An <u>actuary</u> who is responsible for, or significantly involved in, identifying insurer risks should consider factors including, but not limited to, the following:
 - a. The strategic objectives of the enterprise;
 - b. The processes for collecting information and whether the staff have adequate qualifications, training and experience to understand and identify the risks;
 - c. Whether the risk identification process is sufficient to identify current and emerging risks that are reasonably foreseeable, relevant, and material including risks that directly or indirectly impact the financial condition and other objectives of the insurer (e.g. reputational risk);
 - d. The risks specifically referred to in regulations consistent with ICP 8 and ICP 16;
 - e. The time frame over which the risks may emerge and may impact the insurer;
 - f. The risks that may arise from reasonably foreseeable changes in the business of the insurer (operations, markets, products) and from business conduct;
 - g. Whether underlying risks within financial structures that have limited transparency have been sufficiently identified (e.g. off-balance sheet exposures, complex asset or reinsurance structures);
 - h. Whether the reasonably foreseeable causes of insurer risks and their consequences have been sufficiently identified;
 - i. Risks arising or increasing as a consequence of risk management activities (e.g. credit risk arising from the transfer of risk);
 - j. The impact that an insurer's culture, governance structure and remuneration systems may have on the ability and willingness of the management and staff to identify and manage risks, and whether culture, governance structure or remuneration generates, magnifies or mitigates risks; and
 - k. Input regarding the identification of risks from management, other knowledgeable persons within the insurer, other subject matter experts and supervisors.
 - 2.3.2. An <u>actuary</u> who is responsible for, or significantly involved in, assessing the probability and impact of the insurer's risks should consider factors including, but not limited to, the following:

- a. The qualitative assessment of risks in addition to, or instead of, assessing them quantitatively;
- b. Risk correlations, risk aggregations and tail risks (e.g. catastrophe and pandemic risks, and complex outsourcing risks);
- c. The appropriateness of the risk modelling, stress testing, reverse stress testing and scenario testing techniques that are applied;
- d. The extent to which the risk <u>models</u> that measure the probability and impact of risks provide results that are consistent with information expressed by market prices for the risks concerned or related risks;
- e. The consistency among the various valuation methodologies underlying the ERM program;
- f. The operation and effectiveness of the processes and mechanisms used to address risk control and risk mitigation;
- g. The appropriateness of the assumptions regarding future actions taken by management and by external parties, taking into account prior experiences in the industry with similar actions;
- h. Input regarding probability and impact from management, other knowledgeable persons within the insurer, other subject matter experts and supervisors; and
- i. Consistency of risk assessments over time.
- 2.3.3. An <u>actuary</u> who is responsible for, or significantly involved in, implementing or maintaining risk management controls, mitigation, monitoring or communication and reporting of the insurer's risks should consider factors including, but not limited to, the following:
 - a. The insurer's risk management policies and risk appetite and tolerance statements;
 - b. The relationship between the insurer's financial strength and risk profile, and the insurer's risk management system;
 - c. Any significant inconsistency in the evaluation of the insurer's risk tolerances and risk limits;
 - d. The extent to which the results of the risk <u>models</u> used to measure the economic costs and benefits of risk mitigation are consistent with information expressed by market prices for the risks concerned or related risks;
 - e. The operation and effectiveness of the processes and mechanisms used to address risk control and risk mitigation;
 - f. The appropriateness of the assumptions regarding future actions taken by management and by external parties, taking into account prior experiences in the industry with similar actions;
 - g. The culture within the insurer to commit to, and implement, risk mitigation actions when needed;

- h. The impact of reasonably foreseeable future adverse circumstances on the availability and effectiveness of future risk mitigation practices;
- i. The existence and effectiveness of feedback loops in the risk management process; and
- j. How the nature and relative importance of risks may change over time.

2.4. Enterprise Level Risk Management

- 2.4.1. An <u>actuary</u> who is responsible for, or significantly involved in, performing an aggregate risk assessment of the insurer should, in addition to assessing the elements as addressed in section 2.3. above, consider factors including, but not limited to, the following:
 - a. The financial strength, risk profile, business management, governance structure and risk environment of the insurer;
 - b. Whether the risk management processes are suitably aligned with the insurer's objectives and strategy, regarding aggregate risk taking and regarding each major risk category, as reflected by the risk appetite, risk tolerance and risk limits;
 - c. The interdependence of risks relating to the insurer's assets and liabilities, noting that correlation of risks between different asset classes, products and business lines may not be linear, and may change under stressed conditions;
 - d. Off-balance sheet exposures that may revert to the insurer in times of difficulty; and
 - e. Diversification benefits that result from aggregation of risks.
- 2.4.2. An <u>actuary</u> who is responsible for, or significantly involved in, developing, implementing, maintaining or reviewing the insurer's ERM framework should, in addition to assessing the elements as addressed in section 2.4.1. above, consider factors including, but not limited to, the following:
 - a. The engagement of the Board in assessing, setting, monitoring and reviewing the insurer's risk appetite and risk profile, and whether the interests of policyholders and other relevant stakeholders are considered appropriately within those processes;
 - b. The adequacy of the risk management resources and capabilities within the insurer for the current and expected risk profile and risk management strategies;
 - c. The quality, extent and effectiveness of independence, challenge and monitoring reflected in the framework;
 - d. The extent and results of recent reviews and audits of control effectiveness, and management's response to the findings;
 - e. The management of potential conflicts of interest;
 - f. The extent to which risk management and risk assessments are used in the decision-making practices of the insurer;

- g. The effectiveness of risk communication channels within the insurer, including risk escalation processes, and with its supervisors;
- h. The effectiveness and timeliness of the reporting of, and response to, incidences and breaches related to the operation of the ERM framework within the insurer;
- i. The operational quality and effectiveness of key ERM framework related policies, processes and mechanisms, including, but not limited to, outsourcing management, business continuity management (including pandemic response management), whistle blowing policies, fraud and privacy risk management, model risk management and business conduct risk management;
- j. The extent to which the ERM framework is adaptive to changes to the insurer and to its environment;
- k. The extent that the ERM framework complies with regulatory requirements and guidelines applicable to it;
- 1. The adequacy of the insurer's ORSA; and
- m. Contingency plans to restore the insurer's financial strength and viability in severe adverse circumstances.
- 2.4.3. In applying sections 2.4.1. and 2.4.2., if the insurer is part of a group, the <u>actuary</u> should consider factors including, but not limited to, the following:
 - a. The risks and benefits of belonging to a group structure, recognizing potential limits on fungibility of capital and on transfer of assets between separate legal entities;
 - b. Reasonably foreseeable changes in the group structure which could impact the capital and solvency of the insurer and its ability to continue in business;
 - c. Risk modelling, <u>stress testing</u>, <u>reverse stress testing</u> and <u>scenario testing</u> should include changes in the group structure and in the support that the insurer receives from other members of the group;
 - d. Assumptions that may be suitable for a self-standing insurer may not be suitable when the insurer is part of a larger group;
 - e. Imposition of risk management controls and tolerance limits by group management;
 - f. Differences in legal and regulatory requirements between jurisdictions; and
 - g. Contagion effect of adverse circumstances in other members of the group which could impact the capital and solvency of the insurer.

2.5. Own Risk and Solvency Assessment

- 2.5.1. The <u>actuary</u> responsible for, or significantly involved in, developing, implementing, maintaining or reviewing an ORSA for an insurer, should consider, in addition to the items in sections 2.3. and 2.4. above, factors including, but not limited to, the following:
 - a. The time horizon considered by the ORSA;

- b. Whether the qualitative and quantitative risk assessments and the financial projections used in the ORSA are appropriate for their intended purpose;
- c. Any changes to the insurer's risk profile and risk appetite since the previous ORSA;
- d. The various accounting bases of the insurer;
- e. Reasonably foreseeable changes in the external environment;
- f. Allowance for new business, and for the run-off of existing and new business;
- g. Access to new capital in times of financial stress;
- h. Differences between the insurer's regulatory capital requirements and the insurer's own assessment of its capital needs;
- i. The quality and adequacy of the insurer's capital resources in relation to quality and adequacy criteria established by the supervisor;
- j. The degree of severity reflected in the risk modelling, <u>stress testing</u>, <u>reverse</u> <u>stress testing</u> and <u>scenario testing</u>; and
- k. The circumstances that may trigger an ORSA to be performed at a time other than during the regular review schedule.

Section 3. Communication

- **3.1. Disclosures** In addition to complying with <u>ISAP 1</u> Section 3. Communication the <u>actuary</u> should disclose, as applicable to the <u>actuarial services</u> provided:
 - 3.1.1. Where risk management elements required by regulations consistent with ICP 8 and ICP 16 are not in place (2.1.);
 - 3.1.2. Where risk exposures cannot be, or are not, reliably or meaningfully identified or quantified (2.3.1., 2.3.2., 2.4.1., 2.4.2.);
 - 3.1.3. Where the selected assumptions or risk scenarios adopted give rise to ranges of outcomes or frequencies that are materially less severe or frequent than indicated by historic risk experience, known and expected future changes or reasonably foreseeable potential extreme adverse events (2.3.2., 2.4.1.); and
 - 3.1.4. Any significant inconsistency that exists between the insurer's financial strength and risk profile, and the insurer's risk management system (2.3.3.).



This paper has been produced by the Joint Own Risk Solvency Assessment (ORSA) Subcommittee of the Insurance Regulation Committee and the Enterprise and Financial Risk Committee of the IAA and has been approved by both committees.



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Preface

Why is ORSA relevant today?

Insurance company management and boards of directors follow processes to assure themselves 1) that they have the financial resources available to accomplish their objectives and 2) that they can utilize these resources in an efficient manner. Since insurance companies are in the business of taking risk and have the primary objective of fulfilling obligations to policyholders, they must maintain financial resources (capital) to absorb fluctuations in financial results. To determine how much capital is required and to assess capital adequacy, some insurers have relied solely upon the requirements, standards and processes promulgated by regulators and rating agencies. Regulatory and rating agency capital requirements are determined based upon large market segments and hence they disregard the specific risks to which any individual insurance company is exposed. As a consequence, these capital requirements may be too conservative or too optimistic for any given insurer. Because of this, many insurers have spent considerable analytical resources to make their own internal assessment of risk, and of the adequacy and efficient use of their capital.

In response to the IAIS Insurance Core Principle ICP 16, many regulatory regimes around the world now require (or are in the process of developing requirements for) insurance companies to perform own risk and solvency assessments (ORSA) as part of effective risk management systems. New risk-focused regulations require the formalization of ORSA processes and the submission of reports that summarize the results of ORSA processes to regulators on a periodic basis. Regulators are expecting that reporting on ORSA will result in major changes in their own understanding of the inner working of insurers with regard to what they consider to be an issue of highest importance – the maintenance of adequate capital levels for the risks to which an insurance company is exposed, now and in the future, under both expected (baseline) and stressed conditions. Regulators are expecting that ORSA reports will reveal the degree of rigor that is applied by insurers to their ORSA processes and therefore indicate the commitment of the board and senior management to these processes.

As is often the case with the introduction of new regulatory requirements, the simple concept of reporting on an internal management process has taken on a life of its own. The minimum standards for what the regulator is expecting to see from an insurance company's ORSA may be far in excess of the ORSA and risk management processes that many insurers have historically had in place. And the documentation requirements for reporting to the regulator are a far from trivial additional work requirement.

What is ORSA?

ORSA is an ongoing process by which a company's senior management team routinely assesses its own risk and solvency position; it provides a declaration of the company's assessment of its position in terms of profit, risk and capital, both now and in the future, under different scenarios and relative to the company's appetite for risk. ORSA needs to consider and be consistent with an insurance company's business strategy and the business planning process.

ORSA should consider risk and solvency both from a purely economic view and by applying the regulatory requirements, should reflect the material differences between the two, and should

demonstrate that the company's resources are adequate considering both views looking forward over the time horizon of the business planning process under both baseline and stressed conditions.

The ORSA process consists of several major steps along a cycle of appropriate length. The major assessment process of ORSA needs to be carried out on a regular basis and whenever the company experiences a significant change in its risk profile and before major strategic decisions are made.

The main findings of the assessment should be thoroughly analyzed by management and be reported to the board. The ORSA process should be self-reflective, identifying the potential weaknesses and points of improvement of the ORSA process itself.

Introduction

An Executive Board (the Board) has a significant role to play in 1) overseeing management's assessments of risk and solvency and in 2) challenging ORSA results as they are communicated by management. The purpose of this paper is to provide members of the Board insight into the value of the ORSA process – regardless of the specific implementation and requirements for ORSA in a given regulatory environment - and to establish Board expectations for the information that senior management should routinely communicate to them.

Simply stated, ORSA provides a declaration of the company's assessment of its position in terms of profit, risk and capital, both now and in the future, under different scenarios and relative to the company's appetite for risk. ORSA (provided it is effective and clearly communicated):

- 1. Enhances the information basis for Board decisions;
- 2. Provides an understanding of the company's risk profile going forward (how the evolving risk profile relates to the risk appetite under the various alternatives, including major risk drivers, and the capital resources available to support current and emerging risks);
- 3. Increases credibility with regulators or supervisors; and
- 4. Helps build/maintain risk awareness throughout the company.

ORSA is not just a report or an outcome. It is an ongoing process that a company needs to carry out on a regular basis and whenever the company experiences a significant change in its risk profile, and before major strategic decisions are made. Management is responsible for developing and maintaining ORSA processes that respond to the strategic and risk-taking objectives of the company. The true value of ORSA can only be realized when ORSA becomes integral to management's strategic decision-making.

Effective ORSA reporting will enable the Board, in their role of protecting the viability and reputation of the company, to review and challenge management's strategic decisions and recommendations. Boards that have ORSA communicated to them clearly will be knowledgeable about the risks to which their companies are exposed, and the effectiveness of the ERM practices deployed by their companies for evaluating and treating risk. They will ultimately be in a strengthened position to challenge or approve management's risk-based decisions. The success of ORSA processes within any given company will depend upon the strength of a company's risk culture, which is supported - and strengthened - by the commitment of the Board itself.

Understanding the company's risk appetite and risk profile

A significant result of a company's ORSA process is a deepened understanding of the company's risk profile from the perspective of the company's ongoing viability, also called the "solvency risk profile". In the ORSA process, the company assesses all material risks that may have an impact on its viability, from either an economic or a regulatory perspective, and with regard to risks that are both quantifiable and those not readily quantified. This solvency risk profile is a reflection of the contribution of each of those material risks to the total solvency risk of the company.

In their oversight capacity, Board members become deeply familiar with the revenue or profit profile of a company, though the word "profile" is seldom used when looking at premiums or profits by line of business. While it is interesting for the Board to know about profit margins (or profit per unit of premiums), it may be much more important for the Board to regularly discuss with management different levels of profit per unit of risk, information that is available because of the development and communication of the risk profile through the ORSA process. This information can lead to strategic discussions with management about the reasons for participating in businesses with lower risk-adjusted profitability, company plans for growth of businesses with higher and lower risk-adjusted profitability targets as well as plans for the improvement of risk adjusted profitability over time. Similar discussions will consider non-quantifiable risks such as reputation risk.

In addition to revealing the sources for and levels of risk among the businesses of the company, the risk profile also provides a measure of total solvency risk. Attention to this quantum can lead to another vital discussion with management about acceptable levels of solvency risk. For some risks, companies may have a maximum level of acceptable risk. But because insurers are in the risk taking business, and in particular for those risks that are the primary business of the insurer, this acceptable level of risk may have both a minimum and a maximum. This band of acceptable risk is referred to as the risk appetite. A company's risk appetite, once determined by management and reviewed by the Board, can be treated as a budget. When the aggregate risk profile falls outside the risk appetite of the company, management has the responsibility of managing risk activities and only reports to the Board after risk actions have been taken. However, should management contemplate an action that would result in an aggregate risk profile that exceeds the risk appetite, then the Board would need to be consulted in advance and give consent before such actions are undertaken. A Board that is highly involved in risk related decision-making may want to set a risk appetite that is only slightly in excess of the planned risk profile. This might be the case for an insurer that faces very tight constraints from external parties such as rating agencies or regulators on the level of their risk profile.

An insurance company often describes its risk profile within broad categories of risk such as insurance, market, credit, operational, strategic, and liquidity risk. Usually, an insurer will further define insurance risk into major sources of volatility such as mortality, morbidity, catastrophe, non-catastrophe underwriting and reserve risks. A life insurer may also include a major category of asset-liability risk to reflect the fact that the risks of many long term life insurance products are intertwined between the obligations to policyholders and the investments purchased to fund those obligations.

Risk profile and risk appetite assessments and related discussions form a major part of the ORSA process and can be a very helpful way for the Board to be kept aware of major changes in the business. These discussions should be undertaken whenever management proposes

mergers & acquisitions, entering or exiting lines of business (new products), territories (business units), or distribution networks or other major changes in its business model. The degree to which proposed new activities result in diversification or concentration of risk, and whether the resultant aggregate risk profile will fall within the risk appetite become a major part of ORSA discussions between management and the Board. A major consideration in all of those discussions will, of course, be the change in profits and risk adjusted profitability that is expected to result from management's planned actions.

Assessing the adequacy of the risk evaluation and risk treatment processes

Identification

Although insurance companies are exposed to similar types of risk overall (e.g. insurance, market, credit and operational risks), there is no such thing as a benchmark risk profile. Management is responsible for making sure that the company's ORSA process is capable of identifying the unique nature of the company's risk profile, the changes in the risk profile over time, the major drivers of these changes, and reporting this information in a timely fashion.

The Board will only be able to trust ORSA information reported as reliable and useful if the Board understands the linkage between the major individual characteristics of the company's risk profile and the management of risk including capital requirements. Periodic ORSA Board reporting by management, or more specifically, by the risk management function, enables the Board members to satisfy themselves that there is sufficient compatibility between management's business judgment and the ORSA findings.

Priorities

Through ORSA reporting, management will present and seek the Board's consideration of individual risks that have the potential of materially impacting business goals (either adversely or favorably), and the correlation or diversification effect among or between all risks. However, not all elements of the company's risk profile are equally demanding of the Board's attention. It is senior management's responsibility to provide the Board with a prioritized evaluation of all major risks on a periodic basis to enable the Board to effectively challenge and advise management on its evaluation and treatment of risk, including an assessment of the limitations of the evaluation itself (such as with models used).

Quantitative vs. qualitative evaluation and treatment of risks

Strong ORSA processes consider the nature of risks and the most effective means of evaluating and treating material and relevant risks within a company's risk appetite. Not all risks are either quantifiable or worth quantifying. As Einstein put it, "Not everything that can be counted counts – and not everything that counts can be counted." Risks having a material quantifiable impact on the balance sheet should be suitably modeled; using these models, the company's viability may best be protected by holding appropriate levels of capital. However, certain risks that could equally be material and quantifiable may still be treated better by using appropriate risk treatment techniques rather than capital. For example, liquidity risk could be material and quantifiable (such as through liquidity (reverse) stress tests) but may be better treated with a robust liquidity policy overseen with a good governance structure. Certain operational risks may be modeled and hence may contribute to a company's required capital, but it is perhaps more important to protect the firm through an operational risk management policy that applies to
management and all staff which contains carefully designed controls. It is important to note that the use of various risk treatment techniques such as reinsurance or hedging may in fact expose the company to other new risks such as credit risk and these too will need to be addressed in company's ORSA process.

Management needs to make sure that the company's risk management system addresses the risks to which the company is exposed in proportion to the nature of these risks, and ORSA reporting will enable the Board to understand the evaluation and treatment of both quantifiable and non-quantifiable risks over time. In fact, an ORSA process most significant to the Board may not come from the ORSA information shared at a single point in time but through the comparison and analysis of results over time. Since the ORSA process will reflect both actual outcomes and management's future expectations regarding the company's risk profile in relation to the firm's profits, risk and capital position over time, it is the changes to management's expectations that may provide the Board with the most meaningful insight.

What-if analyses

Perhaps the best way to evaluate the impact of risks is the development of a set of carefully designed what-if analyses or stress and scenario tests. Such analyses should include both qualitative and quantitative considerations. The starting point for such analyses is a series of scenarios that express certain adverse future events that will affect solvency and management's potential responses to such events should they occur. These scenarios should be consistent with and proportionate to the nature, scale and complexity of the risks to which the company is currently or may be exposed. Dependencies / correlations should appropriately be incorporated in these evaluations.

As these analyses tend to serve as fundamental risk evaluation approaches within a company's ORSA process, Boards should be made aware of the appropriateness of the economic, strategic and operational scenarios tested. Boards will benefit by having a clear picture about how resistant and resilient the company is to such adverse scenarios. As a consequence the Board may become more informed about management's strategic decisions presented to them through understanding the company's ORSA position before and after a major change.

Capital and resource adequacy

Management routinely assesses the adequacy of available financial resources to fund strategic alternatives or unexpected outcomes, and presents these results to the Board through ORSA reporting. Often, capital adequacy will be evaluated from both an economic and a regulatory perspective, ensuring that the company is able to meet its obligations along the business planning horizon. At any point in time, the company's ORSA may reveal that an insurer has a positive or negative gap of available capital to that required by the company. This result may in turn support alternative capital management strategies proposed by the company.

ORSA should be undertaken regularly to understand how the company's capital need itself changes in relation to the company's changing risk profile. Making sure that the company has adequate financial and operational resources to pursue the intended business strategy is one of the cornerstones of ORSA. The forward looking perspective of ORSA has to be understood to encompass strategic options that may be taken in the future.

Emerging risks

The Board should be made aware of those risks that may threaten the company in the future

even though they may not be visible or material when standard evaluation techniques are used in the ORSA process. Special attention is needed to identify such risks using input from both the Board and the company. What-if analyses can be useful for assessing the potential impact of such emerging risks on the company.

Model validation and governance

ORSA processes may rely upon complex models, which in turn may introduce significant model risk. It is important to assure that models being used are subject to independent validation, and that there are appropriate controls around the inputs to the models (including assumptions and the quality of data), changes to the models, model outputs, and model execution.

Regular review of the ERM framework

It is in the Board's best interest that each and every major part of the ORSA process continues to be fit for purpose. Elements of the ORSA process may have been appropriate at a single point in the past but due to various changes they may no longer be fit for purpose. These elements include the identification and treatment of material and relevant risks, the risk evaluation processes and tools used by the company, and the alignment of ORSA processes with the company's business planning process Regular assessment of the whole ORSA process, even if the result is that no change is necessary, should be part of the ORSA process itself. Periodic independent reviews of the entire ERM framework will benefit both the company and the Board.

Understanding management's strategic risk-based decisions

As discussed earlier with regard to a company's risk profile, ORSA has the potential of shifting the Board's discussion with management away from a strict focus on growth and profits. It can lead to a more holistic understanding of how management balances and ultimately plans to optimize the risks it takes on, the return that can be expected, and the capital required to support the business plan. Management that do this effectively take their company's ERM processes to a new level – away from simply identifying key risks and assuring that adequate risk mitigation controls are in place - to a strategic risk orientation. Such an orientation requires management to assess critically which risks it is willing to take on. It only considers risks within the company's stated risk appetite. It then goes on to evaluate the potential return made possible by accepting the risk. Strategic risk management therefore becomes an integral part of building shareholder value. To evaluate whether the company is moving in this direction, the Board should consider challenging management to demonstrate how each new major risk taken is consistent with the adopted risk strategy and the returns on capital expected from the venture.

Another aspect of strategic risk decision making involves a keen understanding of how risk can be diversified within the company. Generally speaking, taking on new risks that are loosely or even negatively correlated with a company's current risks can lead to more effective management of the overall risk profile. However such diversification is not always easy to achieve for two reasons. First it is often difficult to understand and appreciate fully the correlation among various risks, particularly under stressed conditions. A full understanding requires not only studying the conceptual underpinnings of the various risks, but often requires data that can demonstrate the level of correlation involved. Second seemingly independent risks can become much more correlated during extreme events as illustrated during the September 11th terrorist attacks and the 2008 economic crisis.

Moreover, the objective of diversifying risk must be carefully balanced with a cautious assessment of potential new ventures whose risks are not fully understood. New markets or product lines that potentially diversify the company's risk profile may seem attractive. However the company may suffer losses due to the company's lack of experience and lack of business processes required to operate in these unknown areas.

The same type of approach and considerations apply to the overall strategic planning process itself. Before adopting a strategic plan, the Board should receive sufficient information to ensure that management has identified and quantified the risks inherent in various alternatives, and that sufficient risk mitigation plans have been developed to limit the risk associated with execution of the plan. Management should also explain to the Board the uncertainty in the quantification of risk, and the time to discovery of the actual experience, as this information itself may influence the decisions on how much risk to accept.

While the process of ORSA can be daunting and involve the assessment of many sources of risk, Board members will want to receive sufficient information from management to ensure that both management and the Board are focusing on critical decisions, such as those that address material risks in a manner that drives superior performance vis-à-vis peer competitors. For example, the Board or its risk committee may want to focus all of its attention on understanding management's approach to addressing a handful of the company's most material risks, after mapping and ranking risks in terms of severity and frequency. Also, attention should be focused on any material risks that are unique to the company. For example, a holding company with both insurance and non-insurance operations would be well advised to understand the reputational risks associated with the combined operations as well as the diversification benefits such a structure offers.

Limitations and caveats

Boards should be aware of risk associated with the ORSA process itself. The main risk related to an ORSA process emanates from **incompleteness**, or from **overly complex assessments**. Other important risks result from either **over-reliance** (trusting ORSA too much) or **under-reliance** (trusting ORSA too little).

While the first mentioned risk is permanently present, the other is often emerging over time.

- The **risk of incompleteness** of ORSA results from the fact that every predefined process can deal only with known unknowns. A complete ORSA would include the **assessment of unknown unknowns** which is by nature impossible to put in processes. Furthermore incompleteness often results from focusing on reporting past events instead of performing forward looking risk assessments.
- The **risk of unnecessary complexity** arises when a company devotes significant attention to too many categories of risk, thereby positioning itself to be too slow in making critical decisions.
- The **risk of over-reliance** on an ORSA process often arises in cases where the undertaking's focus is more on process than on its content or results. If ORSA process runs effectively this does not imply that the risk taken by the undertaking is low.

• The **risk of under-reliance** to an ORSA process arises in cases where the ORSA process is too far away from business decisions such that the results of an ORSA are not really used by the company, especially if decisions by the Board are made with no reference to the ORSA.

These major risks related to an ORSA process risks can be addressed by making sure that

- ORSA includes an idea of how the undertaking assesses the risks from unknown unknowns,
- ORSA results are routinely used for high level decisions of the undertaking; and
- The management culture of the undertaking encourages second opinions and critical views of everybody involved in the ORSA-process.

Appendix: Glossary of Terms

- 1. **Economic Capital:** The amount of capital a company requires to survive or to meet a business objective for a specified period of time and risk metric, given its risk profile.
- 2. **Risk**: The potential of future losses or shortfalls from expectations due to the deviation of actual from expected results.
- 3. **Risk Appetite:** The level of aggregate risk that a company chooses to take in pursuit of its objectives.
- 4. **Risk Profile:** The characteristics of the material and relevant risks to which a company is exposed over a specified period of time.
- 5. **Solvency:** The adequacy of available economic or regulatory capital to meet future obligations or regulatory requirements.

IAA Risk Book Chapter 2 - Actuarial Function Stuart Wason

1. Executive Summary

The insurance community increasingly recognizes the importance of the actuarial function (AF) in mitigating risk within insurers and insurance groups through its provision of risk oversight. This has led to active dialogue among insurers, the actuarial profession, and supervisors concerning the scope and responsibilities of the AF and its relationship to various statutory roles (e.g., Appointed Actuary, Chief Actuary, Signing Actuary, and With Profits Actuary). The key messages from this dialogue are of interest to boards, senior management, financial analysts, actuaries, and supervisors. This dialogue has already led to enhanced risk management practices.

These key messages include:

- 1. Insurance supervisors are focusing on the oversight role of the AF as part of the second of the traditional "three lines of defence" in effective risk management.
- 2. Actuaries are not restricted to providing the oversight of risk (i.e., second line of defence), but are active in some or all of the three lines of defence within an insurer.
- 3. Independent risk oversight by the AF is important to boards, senior management, and supervisors because of the unique actuarial perspective of the insurer's risks. Effective AF oversight can facilitate less intrusive supervision.
- 4. The AF is frequently expected to make material contributions to the risk management of the insurer.
- 5. The AF must be organized and operate within an insurer and insurance group in a clear, effective, and transparent manner. This benefits both internal management and interested external stakeholders, such as the insurance supervisor.
- 6. Insurance supervisors develop and maintain confidence in the work of the AF through a combination of:
 - a. Validation of the important aspects of the work of the AF;
 - b. Presence of strong professionalism as evidenced by codes of conduct, standards of practice, and a disciplinary process; and
 - c. Presence of effective feedback loops between the supervisor, profession, standard-setters, and the disciplinary process.

Other related chapters in this *IAA Risk Book* include Governance of Models, Professional Standards, and Own Risk and Solvency Assessment (ORSA).

Within this chapter the word "insurer" is intended to include both reinsurers and insurers.

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2. The Unique Role of the Actuary in Risk Oversight

Insurers require that they take on risk in a way that ensures both the payment of policyholder benefits and the provision of a reasonable return to shareholders. In so doing, insurance satisfies an important societal function in mitigating the financial consequences of adverse events. It also contributes to overall financial stability, timely payments to bondholders, and employment in the community. Due to their skills and education, actuaries have long played a unique role in managing risks and helping to ensure the long-term sustainability of insurers. As a result, jurisdictions have assigned various required roles to actuaries.

While actuaries work in many functional capacities within an insurer (e.g., marketing, product design, enterprise risk management (ERM), pricing, underwriting, investments, reserving/valuation, and financial reporting), their work typically entails both operational and oversight functions. The actuary's work in providing oversight has been formally recognized through the standards of the International Association of Insurance Supervisors (IAIS) that identify the AF as one of four major insurer control functions.¹

The IAIS standards leave the definition of the AF to its members. As a result, as described later in this chapter, several jurisdictions have taken steps to define and assess the AF in their jurisdictions.

The recognition of the importance of the role of the AF in providing risk oversight within insurers has led to active dialogue among insurers, the actuarial profession, and supervisors concerning the scope and nature of the AF and its relationship to various statutory roles (e.g., Appointed Actuary, Chief Actuary, Signing Actuary, and With Profits Actuary). The key messages from this dialogue are of interest to boards, senior management, financial analysts, actuaries, and supervisors, and have led to enhanced risk management practices (e.g., consistent development and use of key assumptions in various processes such as pricing, valuation, and financial projections).

Regulatory recognition of the AF as a control function fits well with current risk management literature, which describes three lines of defence of risk management in the following categories:

- 1. Functions that own, manage, and report on risks (e.g., operational management);
- 2. Functions (and processes) that oversee risks (e.g., AF, risk management, compliance, risk committees, and sign-off requirements); and
- 3. Functions that provide independent assurance (e.g., internal and/or external audit).

Actuaries can actively contribute to each of these lines of defence.

With respect to the third line of defence, additional types of independent assurance external to the insurer can be provided by the external auditors and various specialized experts/consultants retained by the insurer (and sometimes by the supervisor) with regard to specific matters. Additional external actuarial oversight can be provided by actuaries employed for that purpose by the external auditor as well as by consulting actuaries retained to study specific matters.

¹ IAIS ICP 8.2.1: "As part of an effective system of risk management and internal controls, insurers have control functions, including for risk management, compliance, actuarial matters and internal audit." Also, ICP 8.5 states: "The supervisor requires that there is an effective actuarial function capable of evaluating and providing advice to the insurer regarding, at a minimum, technical provisions, premium and pricing activities, and compliance with related statutory and regulatory requirements."

3. Scope of the AF

Actuaries have been involved in the operations of insurers in many different roles since the beginning of the insurance industry. A partial list of these roles includes:

- Valuation of insurance obligations (technical provisions);
- Product design and marketing;
- Product pricing;
- Asset/liability management;
- Participating (with profits) product management;
- Risk mitigation (including reinsurance and hedging);
- Investment management; and
- Risk and capital management (including future financial condition reporting such as ORSA).

The involvement of actuaries in each of these roles has evolved over time and varies by practice area, jurisdiction, and company. For example, actuaries have been very involved in product design for life and annuity products, although in recent years some of these products have become similar to commodities subject to intense regulation, with marketing and sales units driving product design in many cases. While actuaries have had a negligible role with regard to some general insurance product management due to a perceived absence of the need for actuarial expertise in the management of such products, this may be changing as general insurance business has become much more technical in the last 20 years; as a result actuarial involvement has also increased substantially. As a further example, actuarial expertise is frequently involved in investment and asset/liability management within the life insurance and annuity businesses due to the presence of significant and long-term interest rate guarantees and investment-related benefits within these products, there is less need for actuarial involvement.

In fulfilling these roles, actuaries, due to their skills and experience, are frequently involved at all management levels within an insurer—including, for example, as a CEO, chief risk officer (CRO), CFO or chief actuary.

In carrying out their mandate of risk-based supervision, insurance supervisors have recognized the importance of the work of actuaries. This recognition includes, but may be broader than, the work of actuaries who carry out statutory defined roles (e.g., Chief Actuary, Appointed Actuary, Signing Actuary, and With Profits Actuary) as defined by various jurisdictions.

As a result, insurance supervisors are focusing on the oversight role of the AF as part of the second of the traditional three lines of defence. As footnoted previously concerning ICP 8.2.1, supervisors explicitly recognize the importance of the AF as an insurer control function.

Supervisors in their jurisdictions may provide additional direction regarding the AF and its assessment as part of the regime's supervisory framework. Two examples are:

1. EU Article 48 of the Solvency II Framework Directive states:

Insurance and reinsurance undertakings shall provide for an effective actuarial function to:

- a. coordinate the calculation of technical provisions;
- b. ensure the appropriateness of the methodologies and underlying models used as well as the assumptions made in the calculation of technical provisions;
- c. assess the sufficiency and quality of the data used in the calculation of technical provisions;
- d. compare best estimates against experience;
- e. inform the administrative, management or supervisory body of the reliability and adequacy of the calculation of technical provisions;
- f. oversee the calculation of technical provisions ...;
- g. express an opinion on the overall underwriting policy;
- h. express an opinion on the adequacy of reinsurance arrangements; and
- i. contribute to the effective implementation of the risk-management system ..., in particular with respect to the risk modelling underlying the calculation of the capital requirements ... and to the [ORSA] assessment ...
- 2. In Canada, the AF is one of the control functions assessed within the Office of the Superintendent of Financial Institutions' (OSFI's) risk-based supervisory framework. This assessment considers both the characteristics and the performance of the AF. While the scope of the AF is not defined by OSFI, insurers demonstrating a narrower scope of actuarial oversight would be determined to be less effective than other insurers with similar size, scope, and complexity of risks that demonstrate a broader scope of their AF.

These examples illustrate similar, yet different, supervisory approaches to the AF. Other jurisdictions have used various approaches to assessing the AF. Regardless of the specific supervisory expectations in a jurisdiction, the AF is always recognized for its important control and oversight role in insurers.

4. Setting Expectations for the Competencies of the AF

Given the variety of types of AF work (e.g., oversight and review of data quality, experience studies, risk management, actuarial calculations, models, and methods), it is not surprising that IAIS ICP 8 is not specific about the skills or experience that individuals within the AF should have, although ICP guidance 8.5.5 states "a *robust actuarial function that is well positioned, resourced and properly authorised and staffed is essential for the proper operation of the insurer*".

In the EU, Article 48 of the Solvency II Framework Directive also states:

The actuarial function shall be carried out by persons who have knowledge of actuarial and financial mathematics, commensurate with the nature, scale and complexity of the risks inherent in the business of the insurance or reinsurance undertaking, and who are able to demonstrate their relevant experience with applicable professional and other standards.

Although members of European actuarial associations are well qualified to carry out the AF for EU supervised insurers, Article 48 does not rule out the possibility that others may also perform these functions. At the present time, the Actuarial Association of Europe is drafting a model European actuarial standard of practice to provide guidance to actuaries when issuing an Actuarial Function Report (AFR) in connection with Article 48.

Similar to the EU, Canada does not indicate specific credentials for individuals conducting the AF. Nonetheless, OSFI's expectation is that members of the Canadian Institute of Actuaries would carry out the AF for insurers under its supervision. In the United States, actuaries who perform certain functions— e.g., asset adequacy testing or reserve adequacy attestations—must meet certain educational and experience requirements.

In summary, while the standards of the IAIS are not specific about the skills or experience that individuals within the AF should have, jurisdictions have either specified them explicitly or have specified that credentialed actuaries are expected to carry out the AF (however defined by local authorities) in their jurisdiction. In addition, at least one actuarial association is drafting a model standard of practice for actuaries issuing an AFR in compliance with local legislation.

5. Structural Considerations of the AF

Insurers generally organize their AF based on the nature, size, and complexity of their operations. They may be centralized or decentralized and may or may not separate the actuarial and risk functions. Regardless of the manner in which insurers organize themselves, it should always be possible to identify the manner in which actuarial oversight is exercised locally (i.e., in a decentralized model) and then brought together across the insurer or insurance group.

There is no single title used across insurers or within jurisdictions that uniquely identifies the Actuarial Function Head (AFH). Identifying the head of actuarial oversight should be able to be made from an understanding of the AF role rather than through the use of titles such as "Chief Actuary", "Corporate Actuary", "Senior Actuary" and "Appointed Actuary", which may be assigned with different roles/mandates in mind from one insurer to the next. Insurers organize themselves as they see fit. As previously noted, even the supervisory expectations of the AF can differ across jurisdictions. To avoid "titling confusion" within this chapter, the terms AF and AFH are used generally in the context of actuarial oversight, without connection to any specific titling conventions used in the insurance industry.

For larger insurers (in terms of size and complexity), and especially for insurance groups, the manner in which actuarial oversight is provided depends on the needs of underlying businesses as well as organizational preferences toward centralized/decentralized structures. In highly decentralized structures, significant actuarial oversight responsibilities will be assigned to staff local to those business units or insurers. Regardless, the home supervisor for the insurer or the group-wide supervisor, as applicable, seeks to assess the effectiveness of the oversight provided by the AF across the insurer or insurance group. In the EU, for example, an individual must be designated as the main contact for the AF. In Canada, the effectiveness of actuarial oversight for an insurer or insurance group without a clear AFH would be rated as being less effective than a comparable entity with an effective AFH.

It is important that the AF make a strong contribution to the risk management of an insurer. As a result, some insurers may choose to align closely the work of the AF and the work of the CRO. In

some cases it may make sense for the AF to report to the CRO or even to combine these roles into one position. Due to the seniority of the CRO role defined in this manner, reporting to the CEO, it would be in a position to present a very capable challenge to the first line of defence.

On the other hand, boards and supervisors of larger insurers and insurance groups may prefer to have both an AFH with sufficient gravitas to provide an actuarial view of the insurer's risks as well as an organizationally separate CRO. According to this view, the CRO would be responsible for risk management for the insurer while the AFH is responsible for actuarial oversight; together they represent an effective team that can challenge each other's ideas and perspectives. This approach can work well if both the CRO and AFH hold senior roles within the insurer (e.g., each reporting to the CEO). The synergy between the AFH and CRO may be less effective if the AFH and CRO do not have similar seniority in the organization.

In many insurers the actuary responsible for the technical provisions (i.e., perhaps a statutory role in some jurisdictions with a title such as Appointed Actuary or Valuation Actuary) is the most suitable candidate to be the AFH. In the event that this statutory role (e.g., Appointed Actuary) is positioned lower down in the organization structure, such an individual may not have sufficient breadth of perspective to enhance the work of the CRO or sufficient seniority to provide an effective challenge to the CRO. In these cases, another person, higher in the organization and to whom the statutory role reports, may be better positioned to provide effective actuarial oversight as the AFH (e.g., as noted previously this may be the CRO).

In contrast, it may not be economically viable for smaller insurers to maintain staff dedicated solely to the AF or to fully segregate the CRO and AFH duties. Indeed, staff performing the AF role may also have operational responsibilities (although preferably not when this would constitute a conflict of interest). A smaller insurer may be more likely to retain an external consulting actuary to carry out specific duties such as to value or provide an independent assessment of the insurer's policy liabilities (i.e., technical provisions). The precise nature of external actuaries' work and their relationship with the insurer will determine if they, or a staff member of the insurer, are the key providers of actuarial oversight to the insurer. Regardless of who provides it, the oversight and control provided by the AF are essential for the prudent operation of each insurer.

In conclusion, although the AF within an insurer frequently includes actuaries who carry out specified statutory roles (e.g., Appointed Actuary or Signing Actuary), identifying both the scope and responsibilities of the AF and its head or lead person may not be straightforward or obvious solely through examination of the insurer's structure or titling conventions. While it is important for insurers to structure their operations—including their AF's control function—according to their needs and staff, it is also important that the manner in which the AF is organized and operates within an insurer be clear, transparent, and effective for both internal, as well as interested external, stakeholders such as the insurance supervisor.

6. Reliance on the Competency of the AF

The supervisor benefits from the work of the AF (and indeed other insurer control functions) when the AF operates effectively as part of an insurer's second line of defence. The insurance supervisor must validate important aspects of the AF's work to enable the supervisor overseeing the company or group to have sufficient confidence in the work product of the AF. AF effectiveness, including the AF's material contributions to risk management, contributes to streamlining and minimizing the overall supervisory burden on the insurer.

It is important to note that under normal circumstances the validation of the AF's work by the supervisor does not need to duplicate the work of the AF (e.g., model/methodology selection, data validation, recalculation, and assumption setting), nor is it to be performed solely through the application of a checklist. Rather the supervisor seeks sufficient understanding of the AF's work (e.g., key risks, assumptions, and methods) and processes to have confidence that they have been completed in an appropriate and transparent manner in consideration of the risks involved. This in fact is one of the key purposes of this *Risk Book*—that is, to enable a supervisor to better understand the key issues faced by actuaries, both technical and professional, and to identify newly emerging issues.

Validation of the AF effectiveness by the supervisor seeks to confirm the reasonableness of the estimates and judgements applied by the AF. To effectively carry out this assessment, the supervisor must have both a formal and informal relationship with the AF and have access to suitable actuarial resources of its own, either internal to or externally contracted by the supervisor.

7. Provision of Effective Actuarial Oversight

As noted earlier, the AF as a control function fits well with current risk management literature that describes the second line of defence as a function that oversees risks (i.e., distinct from functions that own and manage risks—operational management). In addition, ICP 8.1.19 states:

Subject to the nature, scale and complexity of the insurer, an effective internal controls system typically includes [among other things] ...

Appropriate segregation of duties where necessary and controls to ensure such segregation is observed. Appropriate segregation of duties means, among other things, having sufficient distance between those accountable for a process or policy and those who check if for such process or policy an appropriate control exists and is being applied. It also includes appropriate distance between those who design a control or operate a control and those who check if such control is effective in design and operation.

The elements of an effective internal controls system, such as the AF (i.e., part of second line of defence; segregation of duties), are described collectively in this chapter by the term "independence". The wider dictionary implications of the term "independence" (i.e., part of a standalone entity) are not intended to apply.

For larger, more complex financial institutions, fully independent oversight functions (e.g., risk management, internal audit, actuarial, and compliance) may be appropriate. These functions can be centralized or decentralized with a centralized oversight component. For all institutions it may be more appropriate for a focus that optimizes functional independence over a focus on the structure used. Whatever the size of the organization, the following questions need to be addressed:

- 1. Do the control function employees have clear performance objectives/incentives that link to the management of risk rather than only to targets related to profit, revenues, and volume?
- 2. Is their incentive compensation calculated independently of the results of the business unit they oversee?

The judicious and thoughtful review of risk management information (e.g., ORSA) by the supervisor will assist by means of structured feedback in the assessment, benchmarking, and reporting of the quality of the insurer's AF. Boards and managements should also do more than rely on "gut and instinct" when assessing the effectiveness of the insurer's risk management function. Nonetheless, gut and instinct are useful, as they are reflective of the degree of experience and judgement of those performing such assessment. It is preferable, however, to, in addition, quantify these beliefs and hold periodic third-party reviews of the insurer's oversight functions. This can help boards and management (not to mention the supervisor) to benchmark the insurer's risk management practices and processes, as well as to address any gaps that exist. One source for such reviews may be through the insurer's external auditors, especially their actuarial team. Another source may be consulting firms active in this area.

The AF should be clearly identifiable, with disclosure of any firms or individuals who provide independent actuarial oversight. Given the importance of the work of actuaries to insurers, the risk oversight by the AF should be as independent of management as practical. As mentioned above, the organization of the AF may vary substantially from insurer to insurer, based on their circumstances. The AFH need not be an individual in a statutory or designated actuarial role, although this is frequently the case. It is important that individuals providing independent oversight should not be conflicted by wearing a similar operational role. For example, it is difficult to independently design the set of oversight and control procedures for a hedging program if the individual responsible for this oversight is also responsible for the hedging program's design and operation.

Because actuaries already have experience and skills in and often play a key role in risk management, many are also well suited to provide independent oversight of this area, in a manner similar to what actuaries have developed and applied in other areas. The AF is frequently expected to make material contributions to the risk management of the insurer. For example, this might include contributions to the risk and capital modelling of the insurer as well as in relation to stress and scenario testing undertaken for future financial condition analysis, such as for an ORSA or other board-related needs.

Independent oversight by the AF is important to boards, senior management, and the supervisor, as it provides additional comfort that the insurer's controls are effective. This in turn can lead to enhanced assessment by the supervisor of an insurer's net risk (i.e., the combined risks of the insurer net of the expected effects of applicable risk mitigation) and an appropriate adjustment of the nature and intensity of the supervisory work concerning the insurer or group. If the supervisor is comfortable that the insurer or group's own oversight and risk limit functions are robust and transparent, supervisory oversight can be less intrusive. The opposite would be the case if internal oversight functions are inadequate.

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IAA Risk Book Chapter 3 - Professional Standards Godfrey Perrott

1. Executive Summary

Codes of professional conduct (codes) and professional standards of qualification and practice (standards) provide the context in which sound actuarial practice addresses the needs of those who rely on the profession. The codes of actuarial organizations provide the framework within which standards and ethical behaviour of their members may be addressed. Codes are binding on member actuaries of most actuarial associations wherever they practice, as the scope of such codes and their application is generally international in nature.

2. Key Messages

- 1. Actuarial standards serve to assure the public that actuaries are professionally accountable. This gives the users of actuarial work confidence that the work has been performed appropriately. At the same time, standards provide practicing actuaries with a basis for assuring their work will conform to appropriate practice.
- 2. Actuarial standards (including those applicable to the assessment of risk and solvency of insurance companies and pension plans) can be of significant value to regulators.
- 3. Full Member associations (FMAs) of the International Actuarial Association (IAA) must have codes that contain a common core of general principles. One such principle is that their members comply with applicable actuarial standards.
- 4. Actuarial standards and regulations complement each other. Actuarial standards guide actuarial work. They are usually principle-based, rather than prescriptive, and permit departures from the standard's guidance if they can be justified. Regulations, on the other hand, are usually prescriptive and mandatory.
- 5. Actuarial standards are adopted to apply to actuaries practicing in a particular jurisdiction by whatever authority(ies) in that jurisdiction is (are) entitled to enact standards.
- 6. The scope of actuarial standards includes the process of setting assumptions, selecting methodologies, and disclosing the purpose for which the calculations were made, who set the assumptions, the actuary's opinion on their suitability, and the uncertainty associated with the actuary's estimates.

3. Background

Qualification standards are the requirements that actuaries need to satisfy to be considered by the profession to be qualified to perform the work in question (and in some jurisdictions to describe themselves as an actuary). These usually include initial educational requirements required to obtain sufficient knowledge to practice (broadly or in a particular practice area), continuing professional development (CPD) requirements, and experience requirements. In some jurisdictions qualification

This paper has been produced and approved by the Insurance Regulation Committee of the IAA on 23 July 2015. © 2015 International Actuarial Association / Association Actuarielle Internationale standards may have additional requirements for specific actuarial services such as practicing certificates or heightened CPD requirements.

Actuarial standards of practice address how actuarial work should be performed, and usually apply to the individual actuaries doing the work (in contrast to accounting standards, for example, which apply to the entity that is reporting its financial results). These standards usually apply to specific types of actuarial work, although some apply to all actuarial work.

Both types of standards are generally promulgated by a local standard-setter (often, but not always, the local actuarial association). The applicable regulator in a jurisdiction can require such standards to be followed in that jurisdiction.

This requirement (to comply with codes and standards) is supported in each FMA by a discipline process that can admonish, reprimand, suspend, or even expel a member found (after appropriate due process) to have materially violated applicable codes or standards.

The IAA Professionalism Committee addresses these topics in its paper "The Principles of Professionalism".¹ It includes a comprehensive overview of:

- 1. The accountability of individual actuaries to their actuarial association (or other professional oversight body);
- 2. The educational requirements to become a qualified actuary and the continuing education requirements to maintain that qualification (qualification standards); and
- 3. Codes of conduct (which also refer to standards of qualification, practice, and disciplinary processes).

Material addressing professionalism aspects of cross-border actuarial services can be found in the IAA paper "Principles in Relation to the Governance of International Actuarial Work".²

4. Benefits of Actuarial Standards

A summary of the role and benefits of well-developed and well-managed standards of practice has been described by one standard-setter as follows³:

- 1. Standards of practice serve to assure the public that actuaries are professionally accountable. At the same time, standards provide practicing actuaries with a basis for assuring that their work will conform to appropriate practices. Standards protect the public by:
 - a. Indicating for various areas of actuarial practice the appropriate procedures, techniques, and approaches, thereby enhancing the public's trust in the credibility and completeness of the actuarial work product.
 - b. Providing a means by which the many separate elements that make up actuarial practice can be reviewed and updated on a regular basis, so that practice remains current.

¹ IAA: The Principles of Professionalism, approved 23 January 2012, IAA website:

www.actuaries.org/ABOUT/Documents/Principles_of_Professsionalism_EN.pdf, referenced 26 November 2014. ² Final draft as of August 2014:

www.actuaries.org/CTTEES_PROFESS/Documents/PROFESS_London_Item5a_InternationalGovernanceofActuarial WorkECVersionAugust2014.pdf, referenced 17 February 2015.

³ US Actuarial Standards Board website: www.actuarialstandardsboard.org/aboutasb.asp, referenced 13 June 2014.

- c. Furnishing criteria for evaluating actuarial work products.
- d. Providing a basis for discipline in those instances in which standards are not adhered to.
- 2. For individual actuaries, standards confer major benefits as well, by:
 - a. Providing guidance, particularly in practice areas that may be somewhat unfamiliar.
 - b. Giving strong evidence to any interested observer that the profession serves the public in an effective and responsible way.
 - c. Offering evidence of appropriate professional performance, which constitutes a defense in any civil or professional disciplinary action.
- 3. Standards of practice also serve to further assure regulatory authorities that they can depend on the actuarial profession to act effectively in the public interest. Written standards of practice, coupled with written provisions for disciplining members, show that a profession governs itself and takes an active interest in protecting the public.

The existence of effective standards enables a profession to describe appropriate practice, thereby narrowing the range of acceptable practice and discouraging poor practice. This is achieved both by establishing expectations of professional practice and behaviour and through the threat of professional sanctions. This gives the users of actuarial work confidence that the work has been performed appropriately.

Standard-setters promulgate practice standards to codify appropriate practice. They do not attempt to codify generally accepted practice, as such practice may become outdated or no longer be appropriate. Occasionally a standard may be promulgated for a new area of practice or to comply with new regulation, where no accepted practice has been established.

Actuarial standards also provide support for actuaries doing appropriate work who are challenged by their principal with respect to their work.

5. Standard-Setters and Regulators

Many standard-setters maintain a feedback loop with relevant local regulators (among other feedback loops). Periodic meetings allow regulators to bring issues or concerns that they have observed in their review of practice to the standard-setters. Periodic review of existing standards by practitioners also provides a feedback loop for working actuaries to comment on how the standards may be improved if modified, supplemented, amended, or repealed.

Standards of practice and regulations complement each other. Standards of practice guide actuarial work. They are usually principle-based, rather than prescriptive. In some jurisdictions standards use the verb "must", meaning their guidance has to be followed in all circumstances. Much more often standards do not use the verb "must". Instead, they state what the actuary "should" consider, do, and disclose when performing a particular type of assignment. This accommodates unforeseen situations, not contemplated in the standards, in which application of the standard would produce an inappropriate result. In such situations, it would be unprofessional to apply the standard. However, any such departure from the guidance of a standard should be identified and explained.

Regulations, on the other hand, are usually prescriptive and mandatory. In the event of a conflict between standards and applicable law (including regulations), the law would govern.

6. IAA Model Standards

There are currently two categories of standards—model standards, and local standards applicable to the jurisdiction where the actuarial services are rendered. The IAA promulgates model standards that are not binding but can be used in several ways⁴:

- 1. An individual actuary may state compliance with one or more International Standards of Actuarial Practice (ISAPs) in his/her report (either of the actuary's volition, or because the client requires it), in which case the actuary is bound by those ISAPs.
- 2. A local standard-setter may create a new local standard by adopting an ISAP making only the changes specified in the drafting instructions within the ISAP.
- 3. A local standard-setter may base a new local standard on an ISAP by making more extensive changes.
- 4. A local standard-setter may revise its existing standards to be substantially consistent with an ISAP.
- 5. A local standard-setter may conclude that one or more of its existing standards are substantially consistent with an ISAP.

The development of ISAPs as models is a contribution that the IAA is uniquely positioned to make to stakeholders in the financial services sector worldwide. The strategic objectives of the IAA include objectives to "[e]stablish, maintain and promote common standards of actuarial education and common principles of professional conduct. Promote the development and issuance of actuarial standards in the jurisdictions of all Full Member Associations, and the global convergence of actuarial standards." The status of the development of ISAPs at this time can be found at www.actuaries.org/index.cfm?lang=EN&DSP=PUBLICATIONS&ACT=STANDARDS_ISAP.

Local actuarial standards are promulgated by a local standard-setter, which is often, but not always, an actuarial organization. Examples where this is not the case are the standard-setters in Canada and the United Kingdom (for technical standards), which are independent of the local actuarial organization(s). Local standards under most codes are binding on any credentialed actuary performing actuarial services in the standard-setter's jurisdiction. They may or may not be derived from ISAPs. (Many developed countries, such as the United States, have standards that predate the ISAPs.)

7. Content of Standards

Actuarial standards cover actuarial work such as the process of setting assumptions, selecting methodologies, and making disclosures. These disclosures include the purpose for which the calculations were made, who set the assumptions, the actuary's opinion on their suitability, and the uncertainty associated with the actuary's estimates.

Although historically most actuarial standards of practice focused on the calculations actuaries make or the principles to be followed in making those calculations, they are increasingly focused on processes used by actuaries. Some examples of this process orientation are standards relating to enterprise risk management (ERM) in the United States, and parts of the European Standard of Actuarial Practice 2 *Actuarial Function Report under Solvency II* (a working draft as of June 2015)

⁴ Even if a local standard-setter does not follow any of these actions, it may still benefit from the IAA model standard in the development and maintenance of its own standards.

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in Europe. The US ERM standards in particular address the appropriate processes and considerations needed to evaluate an ERM approach, rather than to produce a number. This is consistent with the recent focus of banking, insurance, and pension regulators on governance structures and processes.

Actuarial standards that are binding on actuaries within the applicable jurisdiction are different from educational or research material that may be published by an actuarial organization. Such material is educational in nature; an actuary may use it or not, as the actuary deems appropriate. This fact is often stated prominently. Examples of this type of material include International Actuarial Notes (IANs) published by the IAA, monographs, and research papers.

8. Enforcement of Standards

As stated in the beginning of this chapter, codes and standards are part of the professional context to ensure that sound actuarial practice addresses the needs of the public at large. This context also needs to include a formal discipline process to ensure that conduct follows the principles laid out in codes and complies with standards. The IAA has therefore established a set of criteria that a discipline process must satisfy as one of the accreditation requirements for FMAs. These criteria are:

- 1. A complaint process is accessible to anyone affected by an actuary's work and the actuary's professional peers.
- 2. Due process of defense is available to the actuary complained against, so that the actuary's rights are fully respected.
- 3. There is an objective formal appeal process independent of the body that has ruled at the prior level.
- 4. There are available sanctions appropriate to the seriousness of the violations committed, including termination of membership in the association.
- 5. Appropriate notice and information are given to the public of the results of the complaint process where any penalty is imposed.

The IAA paper "Professionalism Committee Paper on Considerations in the Design of a Discipline Process"⁵ provides information on the items to be addressed when instituting a formal discipline process.

One way the regulator can verify that standards have been followed is to require a review of an actuary's work by another qualified actuary. This should be an actuary who is qualified to provide the type of work that he or she is reviewing. This normally is an actuary who has not been involved in the work in question. It can be an independent actuary who does not work for the company or group.

⁵ IAA: "Professionalism Committee Paper on Considerations in the Design of a Discipline Process" approved July 2008, IAA website:

www.actuaries.org/CTTEES_ACCRED/Documents/Considerations_Design_Discipline_Process_EN.pdf, referenced 26 November 2014.

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9. Conclusion

Actuarial standards of practice benefit regulators, users of actuarial work, and practicing actuaries as each group carries out their different roles. Actuarial standards support the production of a professional, appropriate work product on which regulators and users may rely with confidence.

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IAA Risk Book Chapter 9—Distribution Risks Sam Gutterman

1. Executive Summary

Each insurer uses one or more distribution channels to sell its products—insurance policies. These channels and their relationships with customers and potential customers represent a significant intangible asset of the insurer. Nevertheless, risks associated with the distribution process, including inappropriate marketing practices, create conduct of business risks. From a prudential perspective, these practices can pose a material risk to an insurer's sustainability, brand value, and income-generating potential. The objective of this chapter is to describe and assess the major sources of these risks to which insurers may be exposed and the processes used to address them.

The key messages of this chapter include:

- 1. Although financial sustainability of an insurer is not often threatened by risks associated with its distribution system and marketing practices, these risks can lead to significant financial and reputational harm from lack of new business or poor quality of business, which can in turn adversely affect its income, brand value, and value as a going concern.
- 2. Distribution risks can result in risks to a distribution channel, to the insurer's business, and ultimately to its financial sustainability.
- 3. Some types of distribution risks are similar to operational risks, which are unpredictable in nature, but can represent significant reputation and financial risks to the insurer.
- 4. Perceived concerns regarding sustainability or brand impairment of an insurer can result in a rapid deterioration of the size and effectiveness of the insurer's distribution system.
- 5. Insurance market conduct supervisors are charged with ensuring that sales and service of insurance policies are made in a manner that delivers acceptable value to the consumer. Their policies and actions can include a range of consumer protection requirements such as suitability standards and disclosure requirements. In some countries, it is common for actuaries to sign off on the accuracy of illustrations of new sales/in-force insurance policies that clearly explain the mechanics of complex or long-term products and provide advice on the suitability of sales to customers.
- 6. Because of the importance of this risk, actuaries are involved in estimating the quality of sales, assessing policy performance in pricing insurance products, and helping to identify and measure distribution and conduct of business risks as part of the assessment of overall enterprise risk management (ERM) for the effective management of these risks.

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2. Introduction

Although sales are important in every industry, due to the complex nature of many insurance products and that in many cases they are sold rather than bought, they are especially full of opportunities and risks. Distribution risks are ultimately the responsibility of the insurer.

Effective new sales to and continuation of coverage of an insurer's customers are vital in enhancing the value of both insurers and their distribution channels, enabling them to operate soundly as effective and sustainable going concerns. Their customers may include individuals and commercial companies. Insurers conduct sales through one or more distribution channels (methods or processes of distributing an insurer's products), either (1) by agents¹ that represent a single or multiple insurers or (2) through other means, such as a website, mobile phone, or mail. Individuals involved in the selling process are often compensated through commissions and/or incentive rewards, often a percentage of the premiums paid or assets under management, or pre-set salary, possibly supplemented by bonuses or other incentives.

Agents that sell longer-duration insurance policies, some of which are complex and involve savings accumulation, are often paid more during the first policy year to reward successful new sales to customers or new policies to existing policyholders. There are also shorter-duration insurance policies, such as policies that provide group and short-term life insurance, motor, property, and other casualty insurance. Insurance can also be sold directly through partners (e.g., banks, micro-insurance institutions, and postal services) or other means (e.g., websites, phones, mail, or advertising).

There are many marketing methods used by insurers, nuances of which vary by market, coverage, country, technology available, and historical development of the insurer. In addition, an insurer can utilize multiple or hybrid forms of distribution methods. The appendix to this chapter provides a description of some of the most significant methods used in many countries.

¹ This chapter uses the term "agent" in a broad sense, including agents, brokers, and employees. In its Insurance Core Principle (ICP) 18, the International Association of Insurance Supervisors (IAIS) identifies this category as "intermediaries". They might also be distribution partners or sponsors that are responsible for or are involved in the distribution process, but whose primary business is not insurance and may not be licensed as an agent. They may be individuals or entities.

Differences between these types of agents can arise because an agent may be viewed legally as representing only one of the parties, typically the insurer, while a broker may be viewed legally as more independent, possibly having some level of fiduciary responsibility to the potential customer. ICP 18.0.9 indicates that (1) "where the intermediary acts primarily on behalf of the insurer, the intermediary sells products for and on behalf of one or more insurers, they are often referred to as 'agent' or 'producer'. Intermediaries may act for a single insurer (sometimes referred to as 'tied') or represent several. The products they can offer may be restricted by agency agreements with the insurer(s) concerned. (2) Where the intermediary acts primarily on behalf of the customer, the intermediary of the insurer(s) whose products he sells. Often referred to as a 'broker', or 'independent financial adviser', they are able to select products from those available across the market." As a result, many jurisdictions differentiate between the requirements of intermediates defined in the supervisory framework as agents and those of brokers.

There are three primary forms of "distribution risk":

- 1. Risks to the distribution channel itself. The quality and sustainability of a distribution channel are subject to a range of risks, which in turn can affect the earnings and sustainability of relevant insurers.
- 2. Risks to the quality or volume of the insurer's insurance policies caused by actions of the distribution channel.
- 3. Risks to the insurer as a company and to its future sales capacity caused by the actions of the distribution channel. These can include decreased volume and quality of business, misselling (i.e., selling an insurance policy inappropriate for the policyholder's situation), and moving books of business in a way that may be inconsistent with the policyholders' interests.

Insurance supervisors are also concerned with the effect an insurer and the distribution of its products has on the citizens of their jurisdiction. Distribution risks (such as inappropriate agent behaviour) and marketing risks (such as inaccurate marketing materials) are referred to together in this chapter as "distribution risks". The distribution channel provides the connection between the insurer and its customers, with its attendant risks of unacceptable sales and marketing practice, especially with respect to those who are not financially or insurance savvy. Insurance supervisors are usually charged with oversight of appropriate product design and rates, including ensuring that insurance policies satisfy the needs intended and treat the insurers' customers fairly. This is in addition to ensuring the sustainability of the insurance system and the insurers that make up that system. The complex nature and perceived lack of transparency of many insurance products, as well as the relative lack of knowledge regarding insurance risks and policy features, have resulted in the need for consumer protection, especially relating to sales of insurance to individuals. These consumer concerns have led, among other requirements, to the licensing of insurance agents, insurance rate regulation, and in some cases regulatory review of insurance products prior to their sale.

In some insurers, the marketing process is viewed as encompassing all elements of the development, maintenance, and management of new business and continuation of existing business of an insurer, from designing and rating its insurance products; growing, managing, and providing incentives for the insurer's distribution channel(s); and communicating with and educating its agents and its customers, as applicable. In contrast, in other insurers the marketing function is distinct from the sales function, which has a separate organizational structure devoted to overseeing operations relating to the insurer's distribution channels. In either case, marketing is involved with, if not responsible for, the development and management of its brand through such approaches as partnering, advertising, sales promotion, and sponsorships.

Some risks are joint risks between the insurer and its distribution channels, especially in the case of agents who are tied to a single insurer, whether as independents or as employees. For example, adverse events or publicity can affect both the insurer and the distribution channel, either directly as a result of data risks (such as cyber-risks or customer file hacking, or inadvertent incorrectly recorded transactions, not uncommon when the Internet or phone is

involved) or in the extreme through criminal activity (such as fraud). If trust in the industry is adversely affected, both the insurer and the insurance distribution channel are negatively affected as well.

Although the emphasis of this chapter is focused on the risks associated with an insurer's distribution channel(s), it is important to note that the benefits of an effective distribution channel are quite significant to the success of the insurer. These risks can be assessed on a qualitative as well as a quantitative manner. Not only does the distribution channel(s) constitute the source of ongoing business and in some cases base from which policyholder services are provided, it can also serve as an effective mitigation tool against other business risks, including field underwriting, communicating the value of the insurer's brand, a positive relationship between the insurer and its customers, and positive influences with respect to market conduct.

3. Risks to the Distribution Channel

Given that effective and efficient distribution channels are of crucial importance to the generation of the future business of an insurer (including in some cases the continued profitability of existing business), risks to one of the insurer's distribution channels can in turn represent a substantial source of risk to the insurer.

Examples of such risks include a deterioration of agent continuity resulting from an aging sales force (for instance, in some developed countries a concentration of post-World War II baby boomers who are currently retiring); skilled salespeople who may not be skilled at being managers of field relationships and operations but have been placed or are chosen to serve as such managers; a poor reputation of its agents due to past inappropriate or fraudulent sales practices; new sources of competition to agents including mobile/Internet-based sales; more intense competition in the same type of distribution channel; poor sales management as evidenced by uncompetitive pricing, compensation, or support services; overconcentration of sales in a single agent or customer; managing general agents that are more focused on generating high sales volume than on generating quality or profitable (to the insurer) sales; and more modern technology that diminishes the relative effectiveness or efficiency of the current distribution channel.

Reputation risk to the insurer can, of course, arise from many sources in addition to the insurer's agents. For example, it can also arise from adverse publicity generated by agents of other insurers (the industry), bad claim practices, intense competition, government actions, or bad media relations.

Especially if the agent is tied to a single insurer, a negative reputation event will also likely lead to adverse publicity to the agent. A related example is that if an insurer's client data file is hacked, not only will there be a loss of customer privacy and possible adverse consequences to the policyholder, but the agent's relation with the policyholder may also be negatively affected.

4. Risks to the Quality or Volume of the Insurer's Policies Caused by the Distribution Channel

The distribution channel(s) and target market(s) of the insurer can significantly influence the type of insureds an insurer will provide insurance to, which consequentially results in different levels of expected insurance cost. Field underwriting² may influence the nature and type of exposures to risk that the insurer will be subject to. Examples of concerns include quality of insurance risks covered in relation to what is anticipated in the insurer's pricing assumptions and policyholder behaviour (e.g., applications not placed, policyholder terminations prior to the policy's expiry) and move business away from the insurer.

- 1. Risk selection. Often, but not always, agents directly or indirectly participate in the risk selection process through identification of customers and field underwriting, which may result in experience inconsistent with pricing assumptions due to potential anti-selection, policyholder moral hazard, or even fraud by applicants. Agents can be more focused on maximizing their personal revenue than maximizing profitable sales—particularly a concern with managing general agents who have been given significant autonomy with respect to the field underwriting and management of their individual agents. If an independent agent splits its business between more than one insurer, the business directed to a particular insurer might be of worse quality, representing adverse risk selection against that insurer. In addition, if an agent gathers incorrect or incomplete information regarding the quality of the risk, the insurer may as a result make incorrect underwriting decisions.
- 2. Policyholder behaviour. Although often thought of solely in relation to premature voluntary policy terminations and nonpayment of premiums relative to pricing expectations, policyholder behaviour also can result in moral hazard with respect to the expected amount of claims or in fraud. Agents can also influence inappropriate exercise of policy options—for instance, the exchange of one policy for another, especially one of another insurer, is often referred to as replacement. Such a replacement may not be in the best financial interest of the policyholder, as it might be the result of an agent more incented by large front-end commissions on long-term insurance policies or by a bonus for block-transfers of a book of short-duration insurance policies such as automobile or personal property insurance, than by the best interest of the policyholder. In fact, a replacement can indicate a situation in which a conflict of interest³ or misselling may be present. In some cases it may not be evident who "owns" the insurance policyholder relationship—

² Selection of potential insured risks by agents in the field, either judgmentally or in accordance with rules set by the insurer, often confirmed by an insurer's underwriter.

³ A conflict of interest can arise where compensation is paid by the insurer for a sale of an insurance policy by an agent. Such compensation may incent an agent to steer a sale toward a product that provides a larger amount of compensation. It may especially arise where it is not clear whether the agent is working primarily on behalf of the insurer or the insured. This has led in some jurisdictions to a greater use of fees payable by the customer for the service of the agent or of required disclosures of the amount of compensation provided.

this may result in alternative service responsibilities and movement of insureds between companies. In summary, agents can influence policy lapse or noncontinuation behaviour counter to the best interest of the policyholders, which at the same time can impair the recovery of acquisition expenses or increase antiselection against the insurer.

3. Policyholder interfaces. A lack of effective and convenient customer interface, whether via technology (website, mobile phone, or toll-free call-in number) can cause significant brand (and even industry) damage for an insurer and its distribution channels.

Actuaries regularly monitor policy experience and develop expectations regarding policy performance and policyholder behaviour, indicated by such experience as high policy lapse and low policy continuation; agent retention; and claim approval rates, changes in sales volume, and expense margins, which are incorporated in premium rates and valuation assumptions. Whether through internally tracked or external customer complaint sources (e.g., sponsored by regulators, independent firm or social network), complaint resolution metrics (by type, resolution percent, and timeliness) can provide useful feedback information to the insurer and supervisor. These are suggestive of distribution issues needing immediate insurer attention. As deviations from these expectations emerge, the insurer assesses whether its expectations need to be revised or corrective action is needed with respect to the insurer's distribution channel or underwriting.

5. Risks to the Insurer Caused by Distribution Channel Activities

The characteristics and quality of a distribution channel, or the effects of management decisions relating to a distribution channel, can also expose the insurer to direct damage in several ways.

Risks resulting from the operation of a distribution channel can include:

- 1. Concentration risk—that is, overreliance on a single distribution channel, a few agents, or a few insureds. In the extreme, this can be the result of over-dependence on the insurer on a single agent or relationship that could (1) adversely influence corporate policy, pricing levels or underwriting decisions; (2) adversely affect profitability; or (3) terminate a significant amount of business from the insurer if corporate decisions don't go its way. Alternatively, if, for example, a large portion of an insurer's sales are from agents located in a particular retail chain (such as a bank or department store), a decision by that retail chain to end the relationship may materially impact the insurer's financial position.
- 2. Outsourcing risk. If the management of a distribution channel has been outsourced to an intermediary (e.g., to a managing general agent) or to a partner (see partnering risk below), the insurer usually has less control of the channel and its business. Although this can result in high acquisition costs because of relatively high commissions/fees, this may be offset by the functions and services provided that the insurer no longer has to fund directly. The outsourced entity may be able to provide immediate scale or recruit more agents more quickly through which higher

volume might be able to be achieved and access to new markets might be obtained, although the arrangement might at the same time contribute to increased concentration risk. Careful ongoing oversight may be required to overcome the direct loss of control.

3. Partnering risk. This can result from partnership with other firms, possibly with a bank (Bancassurance), a retail network, or micro-finance institution, with the responsibility for various functions, including distribution, split between the parties-the relationship involved is usually similar to the outsourcing situation. It should be noted that the more parties involved in the acquisition and servicing processes, the greater the likelihood of inadvertent or intended risks. In addition to the obvious risk of the partner becoming bankrupt, misaligned motivation and incentives, ineffective coordination, and a lack of an exit strategy may harm the insurer. In fact, the partner may be more involved with promoting itself than the success/profitability of the insurance co-venture; if, for example, a representative of the partner sits on the board of the insurer, that representative might influence the decisions of the insurer to favor the partner (as a result, many jurisdictions forbid agency firms to be on the insurer's board). In the case of a bank partner that acted as a corporate agent, the partner could exert undue pressure and influence on the bank's customers to purchase insurance policies passed off as investment products. If inadequately monitored and managed, a potential for misselling and fraud exists, which is bad for business both in the short and long term, representing brand and reputation risk for the insurer.

If the partner is responsible for collecting premiums, the insurer needs to monitor the delivery of premium payments directly to the agent or other intermediary, because they might never reach the insurer, resulting in loss of coverage by the policyholder and ultimately a loss of reputation by the insurer. This could also lead to significant increases in internal and external cost, including litigation costs. This type of risk, which may be widespread among insurers across a particular marketplace or isolated to a particular insurer, is similar to other types of operational risks, leading to loss of future new business. This risk can be exacerbated if the insurer delegates control and inadequately monitors the actions of the agents or managing general agent, as applicable. See Section 6 for further discussion of these risks and related issues of supervisory concern.

4. Cost versus control. The choice of a particular type of distribution channel requires an assessment of the risk of higher compensation, support cost, and effective oversight. Sudden changes in the cost, quality, or number of agents, especially involving a particular product or sector, have to be monitored on a regular basis. Indicators of such a change include unexpected changes in new business, not placement or lapse/continuation rates, outsourcer fees, or bankruptcy of outsourced agents. In any case, the actuary is sensitive to the level of expenses involved in the insurer's operations, including the cost of acquisition—to assess relative competitiveness and the cost and success of agent recruitment—and care is needed to ensure that the agent does not benefit more than the policyholders.

- 5. Up-front compensation. Insurers in many countries pay significantly greater compensation (to those generating the sales or those who are compensated by additional sales) at policy origination than at the time of renewal, e.g., longduration life insurance sold to individuals. On the one hand this can align the interests of the agent and the insurer because in both cases a profitable product can create long-term capital/value for the insurer while providing capital to the agent to build and invest in the business of the agent. On the other hand, it can negatively affect the sustainability of agents as they can become dependent on new sales for cash flows and do not build up a continuing stream of income. In addition, it is important to recognize that this can create a conflict of interest as a result of an over-emphasis on placing new business by agents and on moving (replacing) blocks of business between insurers or between products of the same insurer, a reduced ability to recover acquisition expense, moral hazard, and, in the extreme cases, fraud. Whereas the insurer has an interest in retaining policies and policyholders to ensure recovery of its up-front costs, up-front compensation reduces the incentive for the agent to keep a policy in force, increasing the incentives for selling policies with higher compensation and for churning (replacing) the policy that may not be in the policyholder's best interest. Excessive compensation can prove to be a long-term detriment to consumers, especially for policies with a heavy investment component, e.g., privatized pension products previously sold in Latin America.
- 6. Expense recovery risks. Both greater expenses and inadequate new or total business volume relative to pricing assumptions can lead to a reduction in profitability. Although potentially caused by inaccurate actuarial estimates, this risk can also be caused by a sudden adverse change in distribution channel quality or effectiveness. This impaired expense recovery results from fixed or non-variable expenses or lack of new business or greater than expected policy lapse or non-renewal rates. Larger unit expenses are typically included as part of a stress test to assess the magnitude of its possible impact.
- 7. Rogue agents. In certain cases, an individual agent could act in a manner inconsistent with an insurer's policies and rules, or collude with a third party to take advantage of the insurer, another party, or society. The action might be illegal, such as modifying an insurance policy without the consent of the insurer, charging unauthorized fees, or acting in a fraudulent manner. Such action, once identified and reported to the supervisor or communicated to the public, can cause irreparable harm to the insurer's brand/reputation and cost the insurer a great amount of resources. This can be identified through monitoring of individual agents' business for early lapses, poor placement rates, or missold policies. An insurer can also inquire of peer companies or an applicable supervisor whether a prospective agent has been terminated with cause.
- 8. Tax payments. In some countries, the tax status of agents might change retroactively (e.g., from being an independent contractor to an employee), possibly resulting in considerable tax payments or penalties for the insurer and restructuring of its distribution strategy.

- 9. Technology/regulations. New technology or new regulations can make the current distribution process irrelevant or overly expensive. An example of the use of new technology includes mobile phone apps used to purchase or pay premiums for insurance. For instance, new regulations may require additional continuing education requirements or fiduciary responsibilities, which may result in increased cost or inability to recover previous sunk cost.
- 10. Uncollected chargebacks. In some cases, commission will be charged back to an agent out of future commissions if long-duration policies lapse in their first policy year. However, if an agent severs its relationship with the insurer, the chargeback may become uncollectable.
- 11. Multi-level marketing. Ponzi, or pyramid schemes, where agents are compensated upon recruitment of additional agents, might arise, although rare in insurance. These situations, banned in several jurisdictions, can benefit agents, but eventually run their course to the benefit of no one, other than the first few participants in the scheme.
- 12. Political risk. If the agent or sponsorship is provided by a government or governmental agency, if the head of that government or governmental agency changes or changes policy, or if fraud or kick-backs are proven, the relationship and business can be adversely affected, especially if a large part of the business of the insurer.

Poor management governance practices related to its distribution can also weaken insurer performance. These can include:

- 1. Ineffective or unsuitable distribution channel. A poorly designed or managed distribution channel can develop a low quantity or quality of insurance sales and create a poor public image for the insurer. It can be unsuitable if it is not appropriate for the needs, knowledge, or culture of the target market. This may be as or more important than unsuitable products in providing quality products.
- 2. Management resource risk. It is often a priority to maintain the loyalty of top agents. This may require considerable time by top management and its employees in agent relationships to maintain their loyalty. Although this may be a consciously chosen business priority, it also might divert an inordinate amount of top management time from important strategic issues and toward quantity rather than quality of business.
 - a. Over-emphasis on gaining market share. In some cases, the emphasis of management can be so focused on gaining or defending market share that the quality of its distribution channel, agents, and insurance risks suffers. This can arise when staff in charge of sales or marketing emphasizes increases in sales at the expense of quality of agents, sound underwriting practices, or premium adequacy. An early warning signal of this happening might be a surge in market share that cannot be explained by another factor. Regular discussions with agents can provide insight into the underlying reasons for such a change, which can then lead to appropriate corrective actions.

- 3. Inappropriate product and pricing governance. Mitigation efforts include the design of products suitable to the distribution channels used and target markets, and costs consistent with desired level of competition and risk tolerance.
- 4. Sponsorship risks. Advertisements and sales can be augmented through the endorsement or other use of sponsors and brand salespeople, such as a celebrity. As with any marketing effort, a deterioration in the reputation of the sponsor, celebrity, or agent can result in a significant reduction in the marketing potential of the insurer, although that might prove temporary with timely action by the insurer.

Because of the importance of these risks to the insurer, actuaries are involved in estimating the quality of sales and policy performance in the pricing and valuation of insurance products, as well as in the ERM assessment of the effective management of these risks and distribution performance. Effectiveness and accuracy of sales material, whether in sales brochures, presentations, policy illustrations, website, or mobile phone apps, can be prescreened or audited, as applicable and needed. Although not normally involved in agent training, actuaries can be involved in the development of educational material regarding the products and needs addressed by the products. This involvement not only enables insurers to better identify these risks, but to also develop or enhance the mitigation tools that can reduce the incidence and management of the severity of these risks.

6. Consumer Protection/Selling Risks

Insurers owe their customers a duty of care, which goes beyond simple compliance with laws and regulations. Since either their agents or other contacts with customers are usually provided indirectly through others or by means of technology, distribution and sales risks need to be soundly managed. As a result, the protection of consumers against inappropriate market conduct risks is quite important and should be within the scope of an insurer's ERM. A culture of fair business conduct, responsible pricing, and claims management is a key element of this area of risk management—both top-down and bottom-up methods and emphasis are needed to properly fulfil this important function.

In addition to assuring that contractual promises made by an insurer are kept by means of regulatory standards and supervision of those insurers, insurance supervisors are also often charged with ensuring that the customers of an insurer are treated fairly and are sold policies that meet their insurance needs. In some jurisdictions this supervision is conducted by the same supervisory authority as the supervisor charged with ensuring the solvency of insurers, while in others they are separate.

As a result, supervisors may regulate and monitor certain aspects of rates, products, and agents. This can be done, for instance, in areas such as rate and policy form approvals, minimum standards for policy illustrations and disclosure, remuneration limitations, and agent licensing.

It should be noted that certain regulatory rules designed for agent-based distribution may not be suitable for situations in which an agent is not involved. Supervisors in some less developed jurisdictions may not have adequate resources, rules, or ability to assess penalties for noncompliance. In addition, the regulation of distribution of insurance sales or products

may fall in the cracks between supervisors with specified responsibilities—for example, between different industries/products or solvency/distribution. In some cases, not all those involved in the selling process may be required to satisfy minimum knowledge and experience in the insurance area.

Insurers are subject to conduct of business risk.⁴ Effective management of this risk consists of both operational (process) and strategic (determining the business model followed, including distribution and marketing objectives) elements. A key component of this management is early identification and avoidance of inappropriate market conduct, which can ultimately lead to or be suggestive of future lack of sustainability and sound financial condition, which in turn represents a prudential solvency risk. In addition, they may be a symptom of ineffective governance and lack of internal controls over an insurer's distribution process.

Inappropriate market conduct and lack of consumer protection can result partly from an asymmetry of knowledge regarding insurance and insurance policy features and practice that may be complex and include many technical aspects. This asymmetry is presumed to be more pronounced where the buyer is an individual (such as in the purchase of individual life insurance, micro-insurance, and personal automobile insurance) rather than where the buyer/sponsor is a commercial enterprise (such as is the case for group insurance, commercial liability, or reinsurance). This concern may also arise in less developed markets and jurisdictions. More consumer protection is needed where greater asymmetry exists.

Risks relating to a failure to adhere to regulatory-mandated or generally accepted behaviours, particularly if an insurer or its distribution channels take advantage of this asymmetry to the detriment of customers, are referred to as conduct risks in many jurisdictions. In this century some financial services companies, especially but not exclusively banks, have incurred large fines due to inadequate management of conduct risks. In some cases, conduct risks have been a significant driver of operational risk losses.

Insurance market conduct supervisors are charged with ensuring that sales of insurance policies are conducted in a manner that delivers acceptable value to the consumer, often resulting in consumer protection requirements, including relating to policy features and illustrations of new sales and in-force policies. In some jurisdictions the content of policy illustrations is highly regulated, while in others it is primarily self-policed.

In highly regulated jurisdictions, actuaries are often involved in preparing the values and descriptions of the content of policy illustrations and may be subject to actuarial standards. In self-policed jurisdictions it is especially important that objective advice be provided to those preparing the illustrations, particularly in jurisdictions with less developed insurance markets, where actuarial involvement can be beneficial to help ensure that they are objectively and accurately prepared and are accompanied by understandable information and education, which should be conveniently accessible.

⁴ Risks to customers, insurers, the insurance industry, or the insurance market that arise from the conduct of insurers and/or their distribution channels in developing and managing their business in a manner that may not fairly treat their customers. For further discussion, see the IAIS Issues Paper on "Conduct of Business Risk and its Management": http://iaisweb.org/index.cfm?event=getPage&nodeId=25244.

User-friendly educational information and clear and concise disclosure suitable to the market concerning the workings of insurance (not excessive, as that will likely be ignored by most consumers), provided by insurers, agents, supervisors, schools, or the media can help mitigate any asymmetry and enable consumers to make more well-informed insurance decisions. The sophistication of disclosures should be tailored, where possible, to the knowledge of the users—this is valuable even when middle- and upper-income individuals have enhanced their knowledge through readings about insurance from the Internet or from price comparison websites. Less complex and clearly written policies and policy features can help, especially in less developed markets and jurisdictions. This is particularly important where investment risk is not transferred to the insurer, where there are benefit deductibles and exclusions and possible rate increases, or where the policyholder may not understand all available benefits.

Fairness in treatment may include ensuring that rates charged are not unfairly discriminatory among classes of consumers and that the insurance policies offered adequately meet the needs of the consumers and that they are not overcharged. Concerns over excessive premium rates have arisen for products such as credit life/health insurance (where the consumer is more interested in the loan than in the insurance, so may be subject to excessive premiums in relation to the cost of insurance) and extended warranty coverage, while also for policy fine print, which are inconsistent with policyholder expectations and may affect benefits and claims. Such situations may result from ineffective competition at the consumer level and a lack of informed choice.

Since the distribution system plays an important role in the effective delivery of insurance policies, insurance supervisors are concerned with the effectiveness of the distribution system in soliciting new customers and servicing existing customers. This has led to the licensing of insurance agents to help ensure that these agents have achieved and maintain an acceptable level of knowledge of insurance policies and insurance and financial needs—put in place to provide a framework for regulatory compliance and supervisory oversight.

In response to situations where insurance policies have been missold to consumers (that is, they are not suitable to satisfy the specific consumer needs for which the product was designed), possibly due to the incentives that led to up-front compensation to agents, supervisors have enforced certain consumer protection rules and, in extreme cases, redress. Depending on the market, type of insurance purchased, and individual involved, an insurance consumer may not have sufficient knowledge to completely understand the insurance policy, including its benefits and obligations. In certain cases, an agent or sales information might suggest, through explicit or implicit means, an insurance policy or amount of insurance that is inappropriate for a particular consumer. In others, benefit/claim limitations or exclusions are not clear. In some cases, a pattern of misselling has resulted in substantial fines of insurers or compensation to consumers, which can also result in a significant reduction in the insurer's brand value.

Examples of misselling include: pension misselling in the United Kingdom, credit and payment protection insurance, selling a payout annuity to someone who is seriously ill, inappropriate tax advice or use of a policy designed to dodge a tax rule, the sale of a product designed to help customers in a different income tax category, and inadequate disclosure of

the need for a separate flood or earthquake policy to a customer with material exposure to such a hazard.

As mentioned above, historically, compensation provided by the insurer to agents who sell long-duration insurance policies, especially permanent life insurance, has been front-ended that is, agent compensation in the first year of the insurance policy is much larger than in subsequent years. This has generally reflected the significantly larger investment of time needed to sell these policies than needed to service them. This can create a conflict of interest that can incent the agent to churn the business and has led to cases of misselling, or even fraud.

In some jurisdictions there has been a recent move toward increased disclosure of agent compensation and in some cases has led to the use of fees charged to the insurer's customer instead of compensation provided by the insurer. Advocates of this change have claimed that this will contribute to more objective advice. In several areas, some supervisors have limited insurer expenses—for example, the state of New York in the United States has limited the expenses of insurers in an attempt to provide more value to consumers, while in the United Kingdom the insurance supervisor has conducted a review of "value for money" across numerous life and pension products. Due in part to concern with potential conflicts of interest, other supervisors have capped agent commissions at a certain maximum percentage, possibly a function of services provided, have banned or restricted certain commissions or other incentives, or required disclosure of commissions received.

Insurers, through a range of techniques, provide consumer protection that at the same time manages sales risks. For instance, these controls can include initial agent screening, training and continuing education programs regarding product features and proper sales techniques and sales process rules and requirements, agent compensation and sales targets that consider the implied incentives, agent discipline, periodic audit of sales processes, legal review of all advertising and sales promotional material, and consumer education programs. For distribution channels that do not involve agents, these include technology-efficient and consumer-sensitive information. Various techniques are available to ensure high quality distribution process, including the use of sales audits, customer satisfaction surveys, and a responsive independent sales ombudsmen function.

These techniques not only provide consumer protection, but also protect the insurer from harm from distribution risks. In particular, they are managed and monitored by the insurer's sales management and on the whole as part of insurers' internal audit and ERM processes. Consumer recourse, redress, or consequential adverse publicity, a full discussion of which is outside the scope of this chapter, can be provided by many means, including through consumer complaint services such as a supervisory or other consumer entity or reported on an Internet website set up for this purpose.

Actuaries have also been involved in helping to control these risks. In some jurisdictions these activities have included signing off on the accuracy of illustrations of new sales/in-force policies that clearly explain the mechanics of long-term products and provide advice on the suitability of sales to customers.

7. Conclusion

Distribution- and marketing-related activities, although not often thought of as serious solvency risks, can represent significant financial risks to an insurer, as well as to its customers. In particular, inadequate management of an insurer's distribution channel and agents can lead to situations with adverse consequences to an insurer's sustainability, brand value, and income-generating potential. In addition, supervisors are concerned with inappropriate sales and service, which require consumer protection and consequential action against sales practices and ultimately affect the advisability of allowing the insurer to operate as a going concern.

Sound management of distribution risks will enhance and maintain the value of and trust in the insurer as an ongoing concern. These risks have to be protected against, using such elements as:

- 1. Key performance indicators of the performance of individual agents, intermediaries, and distribution channels addressing the number of customer complaints by type, retention rates of written business, surges in sales not seen company-wide, and possible fraudulent red and yellow flags seen in new business;
- 2. Use of actuarial standards for suitable policy illustrations of long-term products, where applicable;
- 3. Agent and consumer education as to suitable consumer needs for the offered products;
- 4. A possible independent, accountable function (such as ERM) including the monitoring of sales practices and suitability processes and their risks; and
- 5. Regulatory requirements that govern market conduct and sales practices, as well as reviews that can assess the effectiveness of the insurer with respect to disciplining/educating/managing its distribution systems.

Appendix—Types of Distribution Methods

There is a wide range of distribution methods in use by insurers, the relative importance of which depends upon the market, the coverage, available resources, technology, and historical development. An insurer can utilize multiple channels, often one for each business unit, although some business units also utilize multiple distribution channels. Agents (see footnote 1) serve as intermediaries between the insurer and the ultimate insurance consumer, and can be an individual or take the form of an agency, a group of individuals. An agent can specialize in a particular type of insurance product or sell many types. In addition, an insurer may use a combination of these methods in a particular market, e.g., through leads generated by direct or website contacts, followed up by contact from independent agents or insurer employees.

A distribution channel may involve more than one distribution approach or a hybrid method, and that any categorization represents an overlap of approaches, e.g., a full-time career agent may be an employee of an insurer or independent, and a sale may involve both website and agent. The following is one categorization of distribution channels:

- 1. Full-time (tied or captive) career agents. They can be employees or independent contractors who represent a single insurer, primarily involved in selling that insurer's products. The classification as an employee or independent contractor can result from tradition or tax laws. A new agent can be subsidized for a period to allow for training and development of customer relations.
- 2. Salaried employees. They sell products directly to the customers of the insurer. This approach is often used in sales to large accounts—for instance, selling group life/health or commercial property/casualty insurance to large corporations, or direct insurers in the case of reinsurers. Salaries can be fixed or can include incentives /bonuses as a reward for successful sales.
- 3. Independent agents. These are not employees of the insurer. They can be brokers, who can represent multiple numbers of insurers, or those who only sell insurance provided by a single insurer. Their primary business may or may not be to sell insurance products.
- 4. Consultant-led agents. In some market segments, particularly institutional ones, clients employ specialist consultants or advisers to help consumers select between competing providers. Regulatory trends tend to differentiate between agents remunerated solely by the client and the sorts of independent agents referred to above who may traditionally have been remunerated primarily by the insurer. Some insurers' distribution risks diminish if the gatekeeper to the client is remunerated by the client rather than the insurer, but other risks increase, such as the risk of falling out of favor with leading consultants for that market segment.
- 5. Partners. Sales can be generated by or as a result of a partnership with a wide variety of industries that would not otherwise specialize in selling any insurance or the insurance of the type sold. This can involve working with partners or sponsors, sometimes with their own existing networks, whose primary business is not insurance. In some cases, they may not be licensed as an agent. This may provide

an entrée, possibly in the form of bundled products, to potential customers that they would not otherwise be able to access. In some jurisdictions, this includes Bancassurance, in which banks participate, either as an affiliate, partner, or distributor of an insurer's products. Other examples include retail chains, telecommunications entities, micro-finance institutions, trade unions, and post office outlets. Others can sell insurance:

- a. As a consequence or coordinated with the sale of related products, e.g., financial institutions at the time loans are provided and mortuaries (e.g., preneed insurance) in anticipation of a future burial.
- b. That specialize in other types of insurance. For example, sales of life insurance by those who primarily sell property and casualty insurance.
- c. As part of a broader portfolio of products, e.g., other financial institutions and asset managers, especially for wealth products such as annuity, pension, life insurance, and savings products, by employees of the financial institution or the insurer embedded in that related or unrelated companies' operations.
- 6. No agent involvement. Many variations of distribution channels that do not involve or require sales representatives of an insurer exist. In some cases, particularly where a method does not involve an agent to attract a potential customer, an agent who may specialize in insurance will become involved to provide advice or close the sale. They include:
 - a. Website. Sales are obtained through use of a website, often from customers searching for a suitable insurer or insurance policy. In some jurisdictions, an increasing percentage of sales are conducted through the Internet (for example, based on price comparison websites⁵ (PCWs), which may not be able to match needs with product, and may increase the risk that a policyholder decides on a policy solely on price rather than quality or consistency with the individual's needs). Needs for insurance may be established through information obtained on the website or exchanged through social media.
 - b. Mobile phone. Insurance is sold through or with some assistance provided by a mobile network operator, which may pay premiums on behalf of its customer as long as there is a minimum amount of phone usage in the period.
 - c. Advertisements. This method can either be aimed at enhancing an insurer's brand or enticing potential customers to inquire about the insurer's specific products.
 - d. Direct. Sales through this approach can be made through the mail (post), phone solicitation, or through various technologies.

⁵ In the European Union, the Insurance Distribution directive considers PCWs to be an insurance intermediary.

e. Affinity/loyalty. Sales are made through an affiliation of the customer, for example, through an association, labour union or cooperative where the customer is a member or through workplace schemes.

Some insurers have bought blocks of business from other insurers, if not through acquisition of an entire insurer, sometimes obtained through the use of an investment banker. In some cases this block of business or insurer is put into run-off mode—that is, the distribution system used to produce the business does not actively pursue new business for the insurer. Not only are the normal risks associated with deviations from expected experience (e.g., policyholder behaviour, mortality, or claims), but if inadequate due diligence was performed, they might include the cost associated with selling risks including misselling practices generated under prior management.

A managing general agent is a company or agency that controls the means of distribution, usually by means of multiple sub-agents. In some cases, in return for additional compensation it is responsible for specified marketing or other servicing functions.

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IAA Risk Book Chapter 10—Own Risk and Solvency Assessment (ORSA) Maryellen Coggins Nick Dexter Malcolm Kemp John Oost

1. Executive Summary

Own Risk and Solvency Assessment (ORSA) processes sit at the heart of effective enterprise risk management (ERM). While regulators worldwide understand the value of the information communicated as a result of ORSA processes, ORSA is best thought of not as a regulatory requirement but as a collection of internal "own" processes, highly tailored to the nature, scale, and complexity of an insurer, that result in key strategic information for senior management and the board.

Key observations/findings from the chapter include:

- ORSA is an ongoing part of risk and capital management practices and has merit beyond any regulatory requirement;
- ORSA is not a "one-size-fits-all" process. Significant variations occur from company to company, and even within different organizational units of large groups;
- Both quantitative and qualitative analyses support ORSA processes;
- ORSA processes are most effective when integrated within other business processes, particularly strategic and business planning, capital management, and, as appropriate, product pricing and underwriting;
- Promoting ORSA disciplines has value at both a macro (i.e., industry-wide) and at a micro (i.e., company- or group-specific) level; and
- Actuaries are highly experienced in assessing complex topics and have the skills and professional processes and perspective needed to create valuable risk analysis frameworks for management, boards, and regulators.

2. Introduction

The last decade has seen some important advances in the development, use, and application of sustainable enterprise risk management (ERM) frameworks within insurance organizations. As the insurance supervisory community observed the benefits of ERM, many key ERM practices were incorporated into Insurance Core Principle (ICP) 16 Enterprise Risk Management for Solvency Purposes, promulgated by the International Association of Insurance Supervisors (IAIS) during 2011. Likewise, more general core risk management principles have been codified in ICP 8 Risk Management and Internal Controls. ICP 16

This paper has been produced and approved by the Insurance Regulation Committee of the IAA on 8 March 2016 © 2016 International Actuarial Association / Association Actuarielle Internationale reaffirmed for insurance and reinsurance companies the key elements needed for strong and effective ERM practices, and reminds regulators and supervisors worldwide of the need to encourage strong ERM practices within their regulated entities.

ICP 16 requires that a company (defined as either a solo entity or group) establish an ERM framework that specifies the processes and techniques the company will use to maintain its risk exposures within predefined risk limits, and states that a company's risk management framework is to include several key elements, with each element operating in a manner that is consistent with the company's nature, scale, and complexity. Some of the key elements identified within ICP 16 for an insurer's ERM framework include:

- 1. It must provide for the identification and quantification of risk;
- 2. It must include risk management policies to guide the company;
- 3. It must establish and maintain risk tolerances setting out overall quantitative and qualitative levels within which the company assumes and manages risk; and
- 4. It must be responsive to changes in the risk profile and the environment through the periodic conduct and communication of ORSA results, and management's strategic response to these results.

Specifically, ORSA is the ongoing process by which a company's senior management and board routinely assess the key risks to which the company is exposed and the adequacy of capital held to support the risks underwritten or accepted after mitigation and management activities have taken effect, both now and in the future, under different scenarios and relative to the company's appetite for risk. Periodic discussions of ORSA results provide benefits to senior management and the board. Effective use of the ORSA also has wider implications for effective regulatory review and oversight.

The primary objective of the ORSA is to support the company's strategic decision-making, by providing insights into the risks the company chooses to accept in return for the reward that can be expected over the business planning horizon. Specifically, the ORSA will:

- 1. Enhance the information basis for board decisions;
- 2. Provide senior management with an understanding of the company's current and evolving risk profile relative to the company's appetite for risk under the various stress events or scenarios and an understanding of the adequacy of the capital resources to support both current and emerging risks;
- 3. Help build/maintain risk awareness throughout the company; and
- 4. Increase credibility and insight with regulators or supervisors.

Elements of the ORSA may also help supervisors better understand the company's risk profile, risk management framework, and capacity to face the risks to which the company is or may become exposed. More broadly, promoting sound ERM and specifically ORSA disciplines across the insurance industry is considered by many to likely result in businesses that are better able to face current and future risks and uncertainties that will, in aggregate, lead to better and more robustly managed outcomes for policyholders.

3. The ORSA Process

The assessment of key risks and capital adequacy, both current and prospective, under both anticipated (or "baseline") and stressed conditions is fundamental to the ORSA process. While these assessments must pay close attention to regulatory requirements, they fundamentally represent a company's own view of the key risks and the level of capital it needs and the risk management framework it will use to achieve its strategic objectives. It thus goes well beyond the capital required to satisfy rating agencies (i.e., capital sufficient to maintain a targeted financial strength or credit rating) or to satisfy regulators that capital, together with the underlying risk mitigation strategies and control framework, is sufficient to mitigate the risk of insolvency.

The ORSA process generally consists of a variety of assessments that result in an overall understanding of a company's key risks leading to decisions regarding the management of these risks and an understanding of capital adequacy at a given point in time, all communicated through ORSA reporting. The process is expected to be carried out using an overall approach selected by the company that it believes to be appropriate and adequate for its own risk profile and strategic objectives. The ORSA approach is part of the company's risk management framework and needs to fit the company's organizational structure and take into account the nature, scale, and complexity of the risks the company faces and its appetite for risk.

ORSA processes and techniques, which are part of the risk management system of the company, consist typically of the following basic steps that need to be carried out on a periodic basis and upon significant changes to the company's risk profile:

- 1. Identification of key risks, including:
 - a. Identification of the gross (inherent) and net (residual) risk profile of the company; and
 - b. Identification and prioritization of material risks and emerging risks, that is, specific risk events with a potential for having a significant impact on business performance.
- 2. Risk and capital adequacy assessments, including:
 - a. Stress and scenario testing for assessing the financial effect of the quantifiable material known and emerging risks identified, complemented by qualitative techniques for assessing non-quantifiable material and emerging risks;
 - b. Quantification of required capital using an "own" risk measure (e.g., economic capital), required regulatory capital, and other relevant risk measures such as required rating agency capital;
 - c. Identification and acceptance of the principal expert judgements underlying the assessments including the key weaknesses and limitations in the data and models used;
 - d. Assessment of the resultant individual and aggregate risk profile relative to the company's risk appetite framework; and

- e. Assessment of the adequacy of available resources to meet the required capital obligations.
- 3. Communication and reporting of ORSA results, including:
 - a. The results of key risk and aggregate risk assessments relative to the risk appetite framework; and
 - b. An ORSA summary report, prepared with the main findings of the different assessments and a description of the ORSA process.
- 4. Assessments of the ORSA process itself, identifying key expert judgements, potential weaknesses, and points of improvement.

It is important to emphasize that an ORSA is not just a report or an outcome. It is an ongoing process that a company carries out on a periodic basis and whenever the company experiences a significant change in its risk profile or before major strategic decisions are made. The true value of the ORSA can only be realized when ORSA becomes integral to management's strategic decision-making.

Complementing the basic steps of the internal ORSA process, the following regulatory expectations for the ORSA generally apply:

- 1. The ORSA is expected to include an assessment of the company's overall solvency needs (both regulatory requirement and the company's own capital standard);
- 2. The ORSA is expected to be forward-looking, i.e., not merely assessing current solvency needs but also adopting a medium- or longer-term, forward-looking perspective where appropriate;
- 3. ORSAs take into account the company's risk appetite, tolerance, and limits;
- 4. In certain jurisdictions, the ORSA is expected to explain any divergence between how assets and liabilities are valued and recognized in the ORSA and how they are valued and recognized in the company's regulatory capital computations;
- 5. The results of the ORSA are expected to be taken into account in business decisions, including decisions relating to capital management, business planning, and product pricing and underwriting;
- 6. Group-wide ORSAs consider group-specific considerations, such as liquidity and fungibility of capital; and
- 7. The ORSA is expected to be adequately documented such that a third party of the appropriate level of expertise can understand the principal methodologies, processes, key assumptions made, and judgments applied in the ORSA process.

4. Conducting an ORSA

ORSAs are conducted on all material and relevant ("key") risks; utilize appropriate processes for assessing risk and capital adequacy, both as of the evaluation or assessment date and over the business planning horizon; and are to be clearly and appropriately communicated to senior management, the board, and regulators.

I. Identification of Key Risks

The risk profiles of insurance companies vary widely from company to company as a result of the significant variability in business models that they adopt and environments in which they operate. This means that the types of risks to which a specific insurer or reinsurer is most exposed can vary significantly. In general, insurance companies are exposed to different combinations of market, credit, insurance (e.g., premium, reserve, catastrophe, mortality, morbidity, expense, and lapse), and operational risks based upon the products they underwrite, the investments they hold, and the quality of and control over their operations. For example, a "pure" unit linked life insurance company (writing savings products that do not include any embedded guarantees and with minimal protection cover) may be, relatively speaking, heavily exposed to operational risk (and possibly lapse risk) but may only be relatively indirectly exposed to market risk via the fees it collects on the assets being built up by its policyholders. In contrast a long-tail property-casualty (i.e., nonlife) insurer may be more heavily exposed to "insurance" risk.

Given the heterogeneous nature of risks a specific insurer or reinsurer may face, qualitative methods for identifying the risks that are most significant to the insurer, both currently and prospectively, include:

- Discussions with senior management and the board, revealing the type of risks that are most likely to keep senior leaders "awake at night";
- Workshops (usually facilitated by risk managers) during which business leaders explore and rank a range of risks they think are important to their businesses or functional areas;
- Review of risks that other similar companies believe they are exposed to or have suffered loss from, possibly supported by external advisers or data sources;
- Consideration of scientific and environmental reports; and
- Review of the company's own past losses and "near misses" to understand past risk drivers, causes, and impacts.

The processes involved can often be iterative in nature and would include consideration of risks, both gross and net of risk mitigation (e.g., before and after reinsurance). The risks identified will range from those risks amenable to quantitative assessment to those that are more difficult to quantify.

Within all risk assessment methods, it is important to take into account a consideration of known or potential changes to the environment in which the company operates that might have a significant impact on the risks to which the company may be exposed. Typically, an assessment of the potential changes to the environment will include some form of "horizon scanning" for emerging risks, bearing in mind that the environment in which the company operates is rarely static.

II. Assessing Key Risks and Capital Adequacy—Current and Future

Risk and capital adequacy assessments involve the analysis of all material risks the company faces. As a result, companies apply an assessment technique or combination of techniques that are most appropriate for each key risk and for all risks in aggregate, understanding

correlations between risks, the indicated levels of required capital relative to established capital targets, and the adequacy of available capital relative to both own and regulatory measures of required capital.

A. <u>Techniques for Assessing Risk and Capital Adequacy</u>

Risk and capital adequacy assessments may be conducted using a variety of quantitative techniques and tools, such as economic capital modeling and stress and scenario testing. Each type of quantitative approach has its strengths and weaknesses:

- Economic capital models (ECMs) can provide a robust view of a company's future financial condition, and ability to fulfil obligations to policyholders. An ECM depends on a set of assumptions about the general economy, the environment in which the company operates, and the company's operating situation. Economic assumptions are often derived from stochastic generators using parameters based on either historical experience or on current or recent conditions. The resulting models can be extremely complex. Assessing their reliability and validity can be a significant challenge.
- Stress and scenario testing is used either instead of or along with an ECM as part of the capital adequacy assessment process. These techniques can be critical in helping identify potential threats and developing resulting management actions. In contrast to economic capital models, scenario analysis and stress testing assess the financial effect of specific events. They can be used to enhance the understanding of a company's vulnerability to highly uncertain tail risks, and develop suitable mitigating actions. Stress tests can be easier to communicate and be more easily understood by management, board members, and other stakeholders than the output of ECMs. Their use can enhance the risk culture of a company, as they can alert decision-makers to potentially problematic areas and provide a framework to enable companies to base their business strategies and risk mitigation activities on a range of forecasts, rather than on a single best-estimate projected result or an average of stochastic results. Insurers would typically supplement traditional types of stress tests with reverse stress tests that are designed to explore scenarios that result in the company's business model being fatally damaged. One aim of reverse stress tests is to identify business models that are more robust to such scenarios, and also to develop triggers for mitigating actions when a potential threatening scenario may be developing.
- Factor-based models, which rely upon capital factors that are calibrated to a selected return period and applied to financial statement data, are straightforward to use, and can be beneficial for quick assessments of trends. However, they generally rely upon capital factors that have been developed considering industry experience as a whole, and therefore may not fully reflect the risk profile of any individual company.

While it is within the company's discretion to determine the techniques and tools to be used for their "own" assessments of risk and capital, many regulatory regimes either require that companies perform stress and scenario testing for regulatory purposes (e.g., Australia, European Economic Area, Canada), prescribe certain stress tests and scenarios (e.g.,

Bermuda, Canada), or strongly encourage stress testing as a means to communicate the potential impact of the most significant risks and vulnerabilities to which a company is exposed. In addition, companies of a certain size are subjected to stress testing by regulatory bodies (e.g., European Insurance and Occupational Pensions Authority (EIOPA), through National Supervisors), and those insurance companies in the United States that operate within a bank holding company or own a thrift will be subjected to Federal Reserve Board stress testing. Given the sharp increase in regulatory use of stress testing, companies may need to consider how best to incorporate this testing into their ORSA processes.

In addition, in certain regulatory regimes (e.g., Solvency II) the ORSA also needs to include an assessment of the appropriateness of the methodology the company has selected to determine its regulatory capital requirements. Companies subject to this particular regulatory framework can select different approaches for their regulatory capital computations (e.g., standard formula approaches versus internal models and/or use of undertaking-specific factors). Regulators expect the company to justify why the selected approach is reasonable.

B. Establishing Capital Targets

As an integral part of a risk appetite framework, companies establish capital targets that consider the adequacy of own levels of required capital, regulatory required capital, and in certain circumstances rating agency or other measures of required capital. Differences between these capital measures are often based upon different valuation or accounting bases, or are based upon varying time horizons (e.g., one year of new business) and risk measures (e.g., 99.5 Value at Risk). Companies need to understand and be able to reconcile between valuation differences in measures of available capital and defined differences in measures of required capital when establishing capital targets and performing capital adequacy assessments relative to these targets.

Typically, capital targets reflect capital buffers above certain binding capital constraints to allow for loss absorption capacity in the event of a significant stress and in consideration of volatility of profits, uncertainty in the models and data, dividend policies, access to capital, and the overall quality of capital. In certain jurisdictions, ORSA regulatory requirements include the justification that the company will continuously comply with regulatory capital requirements and with other elements (such as computation of liabilities) that influence the company's overall regulatory capital position, i.e., it is not just a point-in-time exercise. The principle underlying this requirement is that companies will not want to be so thinly capitalized (versus their capital risk appetite, as well as regulatory minimum levels, relative to the risks that they face) that they risk becoming undercapitalized just a short time after any capital assessment is carried out.

C. Forward-Looking Assessments

ORSA processes generally consider capital adequacy over the business planning horizon from a given evaluation date, in addition to a point-in-time assessment of risk and capital adequacy. While many companies utilize sophisticated methods and tools that allow for detailed assessment of capital adequacy over a one-year horizon, conducting ORSAs beyond one year requires the design and implementation of approaches that reflect key risk behaviors and likely management responses to risk events when they occur while limiting the additional uncertainty with projecting potential outcomes over multiple years.

There are several methods that can be used for performing multiyear assessments, including multiyear stochastic models, applying stress scenarios to the results of one-year models to reflect an additional year or years of stress events and the development of factor-based approaches based on more complex and granular one-year stochastic model results.

III. Communicating and Reporting ORSA Results

Although the risk and solvency assessments themselves, including the use of modelling and forecasting tools to support them, represent a significant part of the overall ORSA process, ORSAs will be conducted in vain if the results are not communicated and reported effectively and relied upon.

Communicating and reporting ORSA results require companies to distinguish between several distinct groups of users, all of whom may have different needs, both as a result of their own knowledge and the intended uses they have for the information received:

A. Senior Management, the Board, and the Business

To ensure effective communication of ORSA results, companies start by working with the ultimate owner(s) of the ORSA process so that the end results meet their needs. The owner may be designated by local legislation—for example, under Solvency II it is the company board—however, independent of who the owners are, the findings and insights developed through ORSA are carefully designed to meet the needs of the users. In addition to the structure and level of detail provided within ORSA reporting, the owners also approve key aspects of the methodology being used including the key judgements made (e.g., the design of the stress and scenario testing to be carried out).

As usage is not limited to board- or senior-management-level decisions, it is likely that business units may also want to/need to use certain ORSA results for their own decision-making and ORSA communications to satisfy the needs of the business may need to be taken into account.

The process of reporting to the board and senior management is likely to happen at multiple points in the year as various ORSA and other business processes are completed. Companies will need to develop communication plans that are responsive to the timing of ORSA processes, taking advantage of the opportunities to discuss various results more fully as they become available. This ORSA communication plan may need to include a final report that brings all the results together, ideally with references to any supporting documents so these can be accessed as required.

B. Supervisors

Where there may be a requirement, either formally or informally, to provide an ORSA summary report to the supervisor, use of internal reports generated for senior management or the board may be favored to encourage companies to avoid creating separate reports strictly for compliance purposes. However, as the supervisors typically do not have access to day-to-day ORSA processes and internal reporting of ORSA results, they will likely need to reference supporting documentation or the ORSA summary reports themselves will need to include some of this support.

C. Other External Parties

Because the ORSA delivers significant valuable information, such as the business strategy and analysis of key risks, external parties such as rating agencies (and even shareholders and policyholders if they have access to ORSA results) would find the information highly beneficial. However, given that the ORSA report will likely contain proprietary information that management would not want to disclose to competitors, confidentiality of the information must be given the highest priority. External disclosures are likely to be driven by any minimum regulatory requirements, and these may be consistent with the risk disclosures under accounting or investment securities standards.

ORSA internal reporting will aim to communicate at least the main conclusions of the ORSA to all relevant staff. An ORSA supervisory report (if different from internal reports) may need to be more highly tailored to the needs of the supervisor.

Key attributes of any ORSA report include:

- A succinct overview of all key insights arising from the ORSA and how they fit together;
- Analyses of the key scenarios considered, including any management actions that are assumed and confirmation of whether or not these have been approved by the board;
- Where there is "use test" as part of the local regulations, information on where the board has been consulted;
- Either explicitly within the report, or documented separately, descriptions of the methodology and key assumptions underlying ORSA results, including information on the principal limitations and judgements made in the assessment; and
- Cross-referencing to any relevant supporting documents so that additional supporting detail can be obtained if required.

5. Integration with Other Business Processes

The results of ORSA processes are to be taken into consideration in strategic and business decision-making, subsequently reflected in capital management plans, business plans, and decisions regarding product pricing and underwriting (where appropriate and relevant). The most significant phases of the integrated process are depicted in Figure 1 below.



1. Develop or confirm overall risk appetite and risk tolerance.

5. Conduct assessments and communicate results as of the evaluation date and for the planning horizon.

2. Establish the corporate strategy considering overall risk appetite and risk tolerance.

ORSA: An Integrated Process

4. Establish risk based performance targets and establish or confirm risk limits. 3. Develop annual or multi-year business and capital management plans that reflect strategy.

Although the timing of the phases within the integrated process identified in Figure 1 appear to identify a single cyclical process, ORSA processes are to be integrated within the business cycle, e.g., risk and capital assessments are carried out in developing capital management plans. ORSAs are conducted both on a periodic, planned time frame as well as an ad hoc time frame, aligned with potential changes to business strategy or sudden changes to the company's underlying risk profile.

This linkage between a company's business strategy and decision-making processes with its ERM framework including ORSA processes is often referred to as the "use" test by independent reviewers of the ORSA process, including regulators. Ultimately, a strong ERM framework is dependent upon the company's ability and willingness to take action based on the results of the ORSA process. Regulators would view a company's ORSA process as less desirable if that company focuses strictly on understanding risks including implications for their capital and solvency position, but then ignores the insights uncovered in the process. Regulators often value the use test because it incentivizes companies to continue to enhance their risk management disciplines and processes, ultimately leading to further protections for policyholders.

The scope of the use test includes, but is not limited to, senior management and the board responsible for company oversight. Under the use test, senior management is expected to

actively consider ORSA results when developing future strategies, and reliance upon ORSA results is to be clearly evidenced. Boards are expected to be actively involved in framing and overseeing how the company's ORSA is to be carried out, and ORSA results provide valuable information for helping the board oversee the business, challenge activities that seem inappropriate in the context of the company's overall risk appetite, and generally hold senior management accountable. Engaging the board in the ORSA process makes it more likely that the ORSA will address the needs of all stakeholders and not just those most closely associated with the perspectives of senior management.

6. Other Group Considerations

Group-wide ORSAs will need to reflect potentially differing risk perspectives arising from different parts of the group, including risks arising from exposures that one member of the group may have relative to other group members, and group-wide exposure to risks that could impact multiple entities at the same time. Group-wide ORSAs would be expected to consider the extent to which capital is available to, and fungible and transferable between, different companies within the group (including exposure to foreign exchange risk), as well as the impact of any planned transfers of capital around the group or other planned risk redistribution activities. Group-wide ORSAs would also be expected to cover the extent to which business strategy and risk management disciplines were aligned across the group.

As groups can span many different jurisdictions and business types, regulatory reporting of group-wide ORSAs clearly identifies the companies that are within or excluded from the scope of the ORSA. If applicable, group ORSAs need to spell out how any governance requirements and variations in risk management perspectives applicable to individual companies within the group have been addressed. For multinational groups some more practical administrative issues would also typically be specified by regulation, e.g., the language(s) in which regulatory reporting of group-wide ORSAs need to be prepared and how the group-wide ORSA addresses any differences in supervisory needs across the different jurisdictions involved.

If the head (or other significant part) of the group is not an insurer then the intrinsic merits of a group ORSA are not diminished. However, the details might need adapting to address any regulatory requirements applicable to non-insurer elements of the group.

7. Guiding the ORSA Process

Companies develop policies and procedures related to key business processes, and for Solvency II, ORSA processes will be captured within a documented ORSA policy that articulates how the ORSA is to be carried out, a record of each ORSA conducted, and both an internal and a supervisory report on the ORSA (although these two reports may be the same). Solvency II also requires a summary of the ORSA approach to be made publicly available, so that customers and other external stakeholders can better understand the company's risk management disciplines and solvency needs. The ORSA policy is expected to include descriptions of the processes, procedures, methodologies, and data quality standards used by the company. This would typically include information on the frequency and timing of the ORSA and how associated stress tests, sensitivity analyses, reverse stress tests, and other

relevant analyses are to be carried out. This ORSA policy is also expected to justify why the selected approach is suitable, given the company's risk profile and how this profile might vary through time.

Public disclosures may also help to promote wider adoption of best practice ORSA disciplines, benefiting the industry and customers more generally. However, as stated earlier, since the ORSA reports would likely contain proprietary information that management would not want to disclose to competitors, confidentiality of the information must be given the highest priority.

8. Insurance Supervision and ORSA

In certain regulatory regimes, supervisors may have the authority to require enhancements to ORSA approaches if they be deemed to be deficient, or to penalize companies in specified ways.

Supervisors have the general authority to request information from insurers where that information is deemed important to understand the nature of the risks assumed and the adequacy of capital to provide for those risks. Supervisors may ask for additional information or analysis sufficient for this purpose if it is not already contained within the ORSA, or other relevant risk and capital assessment processes of the insurer. In some circumstances supervisors may also exercise their authority to affect capital targets by imposing additional external constraints to be taken into account by the insurer in its own capital identification process.

9. Actuaries and ORSA

Since the conduct of ORSAs is often highly technical, companies are likely to rely on actuaries and other professionals to lead or provide support for ORSA processes. While actuaries have a key part to play in ORSA processes, it is important that they work with other professionals who will also have a part to play, including other colleagues in risk, finance, legal, claims, and underwriting. In addition it is important actuaries in solo companies interact with their colleagues in group roles when applicable.

Actuaries are highly experienced in assessing complex topics, and have the skills and professional processes and perspective needed to create valuable risk analysis frameworks for management, boards, and regulators. Beyond their experience with ERM and ORSA, actuaries have practiced in areas in which they commonly assess the impact of low-frequency and high-severity events such as extreme market conditions, pandemics, or hurricanes. Traditional actuarial functions, such as pricing and reserving for insurance companies, include estimating the central tendencies of likely future outcomes and developing an understanding of the variability around those estimates. Pricing and reserving may require the estimation of margins for risk variability, and development of those margins requires a deep understanding of risk. Further, actuaries apply risk assessment techniques that account for the nature, scale, complexity, and correlation of a wide range of risks and that reflect risk-mitigation strategies.

I. Recent Professional Milestones

- 1. In 2009, actuaries embraced tailored ERM education through the Chartered Enterprise Risk Analyst (CERA) program, which expands on the existing risk management education of actuaries. The CERA syllabus requires that the actuary master such topics as the drivers and practical aspects of ERM, relevant regulation and regulatory capital requirements, and ERM standards and leading practices that are in use around the world.
- 2. In 2013, the U.S. Actuarial Standards Board (ASB) formally adopted Actuarial Standards of Practice 46 and 47 in regard to actuarial services relating to the evaluation and treatment of risk. The ASB is currently considering whether further guidance is needed for the conduct of capital adequacy assessments, and expects to publish an exposure draft in the second half of 2016.
- 3. The Actuarial Association of Europe (AAE) is preparing European Standard on Actuarial Practice 3 on actuarial practices in relation to the ORSA process.
- 4. In 2014, a similar project was initiated by the International Actuarial Association (IAA) to prepare an International Standard of Practice in relation to ERM.
- 5. In 2015, an issue brief developed by the IAA on the "Value of the ORSA" to a board was formally approved for distribution.

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Core Curriculum for Insurance Supervisors

Module 5.1.1 Reinsurance

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Using the Core Curriculum

Purpose

The IAIS Insurance Core Principles (ICPs) provide a globally accepted framework for the supervision of the insurance sector. The ICPs is suitable to apply to insurance supervision in all jurisdictions regardless of the level of development or sophistication of the insurance markets and the type of insurance products or services supervised.

The Core Curriculum provides non-commercial training materials to support insurance supervisors as they implement the ICPs. They give insight and background to the ICPs and the concepts underlying them. There is also a focus on the practical application of supervisory concepts.

Supervisory practices are constantly evolving reflecting experience and changing environments. Consequently, Core curriculum materials should not be read as providing 'the answer' to a particular issue, but as providing guidance, approaches and matters to be considered by supervisors when they address specific issues in their own particular context.

Audience

The key users of the Core Curriculum material include:

- Trainers of insurance supervisors
- Individual insurance supervisors, and
- Other parties interested in sound and effective regulatory and supervisory practices.

Link document

The Core Curriculum Link document provides a mapping between the ICPs and the Core Curriculum modules. As ICPs and/or the Core Curriculum modules evolve, their relationship is described by the Link document (see <u>www.iaisweb.org</u>). This allows users to navigate from ICPs to relevant Core Curriculum modules and in the opposite direction.

Learning advice

Different users have different needs to and will use the Core Curriculum modules in different ways. The Core Curriculum Learning advice document provides users with suggestions on using Core Curriculum materials to meet a variety of needs. You are recommended to use the Learning advice document (see <u>www.iaisweb.org</u>) to support your use of the Core Curriculum modules.



This module

Summary

The purpose of this module, 5.1.1, Reinsurance, is to provide an introduction to reinsurance, focusing on the following:

- Purpose and role of reinsurance
- Financial impact on a ceding insurer of reinsurance protection bought
- Security of the reinsurance protection bought
- Insurer failures due to reinsurance issues

Several points are relevant when reading this module. First, reinsurance is as broad and as complex as the insurance industry itself. As a result, in some cases, this module raises questions rather than providing answers. Second, the area of reinsurance and risk transfer is continually evolving area. For these reasons, users of this module should seek further review before making judgments or decisions based solely on information contained here.

Learning objectives

When you complete this module, you should be able to:

- 1. Identify and gain familiarity with key elements of reinsurance, including:
- 2. Most commonly used definitions in the field
- 3. Why insurers buy reinsurance
- 4. Variety of reinsurance protection traded
- 5. Understand the mechanics of reinsurance as a risk mitigation technique
- 6. How reinsurance works
- 7. Effects of reinsurance on the ceding insurer
- 8. How reinsurance relates to the overall ceding insurer's risk management
- 9. Uses and misuses of reinsurance



1 Definition of reinsurance

Reinsurance refers to a mechanism that an insurer uses to obtain protection against some or all risks associated with the insurance policies it issues. Typically, this process involves an assuming reinsurer who, for a consideration, indemnifies the ceding or direct insurer against some or all of the loss it may incur under a policy or policies it has issued. From here on, the term "insurer" is used to mean the direct or ceding insurer, and the term reinsurer is selfexplanatory.

1.1 Terms used

Many of the insurance related terms used in this module are defined in the IAIS Glossary of Terms (see <u>www.iaisweb.org</u>). When additional terms are used they are defined in the text.

The terms regulation and supervision are often used interchangeably, but they mean different things. In this module, regulators establish "the rules of the game," such as regulations and guidelines related to an Insurance Act (or Acts). Supervisors are the "referees" whose role is to oversee that these rules are complied with and deal with the consequences of non-compliance. This requires supervisors to apply judgement when making determinations and decisions. Understanding the difference between the regulators and supervision is important when allocating of responsibilities between regulators and supervisors, especially when they are different agencies.

In this module "supervisor" is used to include both regulators and supervisors. The module also assumes that supervisors are insurance supervisors. Supervisors, as determined by the context of the particular use, may be either the individuals working for a supervisory agency or authority or the authority itself.

While the terms used in this module are suitable for the purposes of this module, it may be that in specific real situations, more detailed definitions or explanations are necessary. These more detailed definitions may also vary between jurisdictions.

Some terms may not have unique meanings, and definitions contained in various sources may differ. To avoid ambiguity and reduce the risk of misuse and misinterpretation, readers should take care to be comfortable they are clear on the definitions of the terms used.

1.2 Important aspects of reinsurance

Several important consequences flow from this definition:

• *Direct insurer liability to policyholder.* The direct insurer remains fully liable to the policyholder to whom policies were issued. In general, policyholders are unaware



of any reinsurance arrangements. If the direct insurer defaults or fails, policyholders do not have a direct claim on reinsurers.

- *Risk transfer.* Reinsurance transfers risk undertaken by the direct insurer. Establishing whether the risk is transferred properly requires identifying the risk(s) transferred, quantifying the risk(s) transferred, quantifying the considerations and benefits involved, and assessing whether the risk(s) transferred and considerations involved are appropriate to each other.
- The term reinsurance does not include specific insurance that an insurer may take out to address risks it has not underwritten, such as workers' compensation insurance taken out by the insurer to cover injuries to employees. It is also possible that the insurer may choose to "self-insure" such risks if doing so is legally permitted and if the appropriate expertise, controls, and processes are in place. Issues relating to self-insurance are not pursued here.
- *Retrocession*. A reinsurer may transfer to other reinsurers some of the risk assumed. This is a common occurrence. Conceptually there is little difference between a retrocession by a reinsurer to another reinsurer and reinsurance between a direct insurer and a reinsurer, except that the retrocession is a transaction between "peers."
- *Alternative Risk Transfer.* The risk transfer process does not necessarily require the involvement of another (re)insurer. Other risk transfer approaches may serve the same purpose as reinsurance in certain circumstances.

For example, an insurer may purchase protection via an Industry Loss Warranty (ILW) which is a financial instrument that enables the insurer to collect a payment from the protection seller, not necessarily an insurer, based not on a loss suffered by the insurer. Different from ordinary insurance, ILWs do not operate on an indemnity basis; payouts are determined by the levels of losses suffered by the industry as a whole. This module focuses on reinsurance, although some alternatives are mentioned.

• *Process risks*. The implementation of reinsurance arrangements contains a number of risks that need to be considered. Reinsurance basis risk is the risk that the reinsurance cover might prove insufficient for the risk in question because the need for reinsurance has not been precisely identified.

This may occur if, for example:

• The insurer incorrectly identifies the need for reinsurance or incorrectly describes the need to reinsurers.



- Relevant clauses in the reinsurance contract are inappropriate or omitted. Also, the wording of reinsurance contracts may be incompatible with the underlying insurance contracts, particularly in harder reinsurance markets when greater exclusions may be applied.
- Operational risk. This is the risk that the people, process, or systems on which the management and execution of the reinsurance process depend will fail or be inadequate. Outsourcing risk may also arise. Reinsurance arrangements are subject to the same risks as other outsourced functions. These risks may be exacerbated when a reinsurer is domiciled outside the supervisor's and, most likely, the direct insurer's jurisdiction.
- *Reinsurance credit risk.* While the insurer may pass risk to the reinsurer, the insurer takes on some risks, of a different nature, as a consequence. In particular, the insurer takes on the risk that its reinsurer might fail and so void the reinsurance coverage.
- Specialisation. A given insurer may be a direct insurer for certain risks, but a reinsurer for other risks. This gives rise to the use of the terms outward reinsurance and inward reinsurance (sometimes called reinsurance assumed) to describe the two directions in which the reinsurance arrangement may flow. While insurers may be specialist reinsurers or specialist insurers, it is not uncommon for insurance entities to be involved with both outward and inward reinsurance.

1.3 Other commonly used terms

Many terms take on specific meanings in the context of insurance and reinsurance. Moreover, while some terms used in reinsurance are recognised internationally, other meanings may vary from one Jurisdiction to another. The following list includes key terms specifically relating to reinsurance:

- *Automatic treaty*. A reinsurance contract under which risks written by the reinsured are automatically assumed (accepted) by the reinsurer subject only to the terms and conditions of the treaty
- *Ceding company*. The company that places reinsurance as distinguished from the company that accepts reinsurance
- *Direct writer*. In reinsurance, the company that originally writes the business
- *Excess-of-loss reinsurance*. A form of reinsurance whereby the reinsuring company reimburses the ceding company for the amount and only the amount of loss the ceding company suffers over and above an agreed aggregate sum in any one loss or in a number of losses arising out of any one event



- *Facultative reinsurance*. Reinsurance effected item by item and accepted or declined by the reinsuring company after scrutiny as opposed to reinsurance effected by treaty
- *Quota share reinsurance*. A contract that reinsures an agreed fraction of every risk of the kind described in the contract, which the ceding company writes
- *Reinsurance.* Insurance placed by an underwriter with another company to reduce the amount of risk assumed under the original insurance
- *Reinsurance basis risk.* The risk that the amount of reinsurance might prove insufficient to cover the risk in question because reinsurance needs have not been identified precisely, with the result that relevant clauses of the reinsurance contract might be inappropriate
- *Reinsurance credit risk*. The risk that a reinsurer might prove unable or unwilling to pay its part of the liabilities or the claims incurred, which can put the insurer's liquidity at risk and even cause its bankruptcy
- *Reinsurance risk.* The risk that reinsurance coverage will be insufficient or that reinsurers will fail to pay their part of the overall liabilities (or incurred claims) evaluated on a gross basis; this risk can be separated further between reinsurance basis risk and reinsurance credit risk
- *Retention*. The act of retaining an exposure to loss; also that part of the exposure that is retained
- *Retrocession*. The amount of risk that a reinsurer reinsures and the amount of a cession that the reinsurer passes on.



2 **Purpose and benefits of reinsurance**

2.1 Purpose

Insurers can be expected to undertake overall risk management programs. Within this, a key technical aspect is the control and management of underwriting risk. Underwriting is the process by which an insurer determines whether or not and on what basis it will accept an application for insurance, thus offering coverage against the specific risks identified.

In general, insurance can be viewed as an economic device whereby the individual substitutes a small certain cost (the premium) for a large uncertain financial loss (the contingency insured against) that would exist if it were not for the insurance contract. That is, the basic purpose of insurance is to provide individual policyholders with a means to spread or diversify risk that might otherwise be unacceptable or unmanageable to the individual. The mathematical justification as to why this can work in practice lies in the law of large numbers.

The law of large numbers concludes that, when statistically identical risks are pooled together, the larger the pool of risks becomes, the smaller the relative variability in results becomes. That is, the larger the pool, the more likely it is that the total amount of claims will converge to expectations (presuming no errors in underlying assumptions). Mathematically, the coefficient of variation, defined as the standard deviation divided by the mean, provides a measure of the relative variability of a statistical distribution—in this case, the distribution of claims results. It can be shown that the coefficient of variation of a sum of independent, identically distributed random variables is inversely proportional to the square root of the number of variables in the sum. This mathematical result is what makes insurance viable: by pooling large numbers of statistically similar risks, the individual, large coefficients of variation combine to provide a sufficiently small coefficient of variation for the pool.

Several key observations follow:

• *Capital.* The variability of results is reduced, because capital typically must be held to provide support in the case of adverse results—that is, adverse variations from expected results. In practice, capital is in limited supply for insurers and reinsurers. The pooling effect of reducing variability of results translates to reducing the capital requirements, when measured on a per policy basis. Alternatively, the need for capital increases at a slower rate than the growth rate of an insurance portfolio (assuming statistically independent and identical risks).

Reinsurance can reduce the probability of occasional large losses, reducing the variability of results, thereby potentially reducing the minimum capital that the insurer is required to hold.



• *Homogeneous risks*. In practice most pools of insured risks are not homogeneous. While homogeneity is a useful assumption for demonstrating the validity of the insurance concept and may be assisted by appropriate underwriting, it does not hold in practice. To the extent that risks are not homogeneous in type, severity, or frequency, the theoretical results are weakened.

This highlights the importance of insurers and reinsurers understanding the structure of their insured pools and sub-pools of risks. In the case of reinsurers who rely, perhaps entirely, on the underwriting of the ceding insurer, there is the added risk of underwriting error or bias of the insurer to consider.

- Independence of risks. The justification for pooling presumes that risks are independent of each other. Again this is rarely true in practice, and there may be correlations, albeit of varying strengths. A clear example of correlations is the level of geographic concentration of risk for, say, hailstone damage to motor vehicles.
- *Pooling in reality*. Despite the warnings in the prior two points, the pooling effect is strong, and it is generally held that, for similarly distributed variables that are not strongly correlated, the law of large numbers, which provides the basis for insurance, will continue to hold.

In summary, the traditional justification for reinsurance is the same as for insurance. The pooling of (similar) risks reduces the variability of the overall outcome. In the same way that insurance provides a means for policyholders to manage their risks, reinsurance provides a means for insurers to manage their risks. In particular, reinsurance offers an opportunity for ceding companies to cede risks or portions of risks that are outliers, thus increasing the homogeneity of their retained (net) insurance portfolios. Hence reinsured risks are typically large or concentrated in some way.

Most non-life reinsurance contracts last for one year and cover only a specified line of business. Life reinsurance contracts, in contrast, usually cover indefinite periods and commonly contain a termination condition for new business only.

The structure of a typical non-life reinsurance contract provides the opportunity for additional levels of pooling, such as covering an extended period, multiple product lines, or both. While commensurately harder to price and manage, the additional protection provided by increased pooling is a compensating advantage. This is one aspect of finite risk reinsurance and blended reinsurance covers.

Reinsurance provides an insurer with the opportunity to diversify certain risks, typically those that may reduce the homogeneity of the insured pool for some reason. Moreover, the insurer may not have the desire or sufficient capital to hold a full insurance portfolio and so may seek to share the risk with a reinsurer. In each of these situations, the transfer of risk is the key to



supporting the adequacy of the insurer's capital position. From an accounting perspective, it is important to ensure that sufficient risk is transferred for the arrangement to qualify as reinsurance.

2.2 Benefits

A number of advantages generally accompany the implementation of reinsurance programs, these include:

- *Diversification of underwritten risk*, which limits catastrophic risks, total claims, and the variability of total claims in various ways.
- *Increase in new business capacity*, which provides the insurer with the ability to take on larger risks than it might prudently consider on a "standalone" basis.
- Access to expertise, which provides product advice, especially in the case of new or innovative products, underwriting advice, especially in the case of products new to the insurer, and claims advice, especially in the case of long-term insurance and emerging industry experience.
- Opportunity to divest a product line, for example, when an insurer plans to exit a certain business or product, perhaps in a given geographic area. In some cases, this may be via an assumption reinsurance arrangement where, in principle, the policyholders are notified that liabilities will be transferred permanently to the reinsurer and that all future premiums and claims will become the direct responsibility of the reinsurer.
- However, it is important to recognise specific national legal issues regarding the details of the transfer. Alternatively, a more standard indemnity reinsurance arrangement, contractually binding between the insurer and reinsurer (but leaving the policyholder's direct contractual relationship with the insurer only), may be put in place.
- *Financial results management*, which allows insurers to use the financial reporting implications of reinsurance agreements to change their reported results. Specifically, reinsurance may enable insurers to stabilise annual earnings over time, improve capital efficiency, reduce strains from undiscounted technical provisions, spread or improve income tax effects, and provide financial leverage. In all cases, changes to reported profitability occur even if they are only changes in timing.

An example is relief from frontend strain, particularly in life insurance. The accounting and income tax treatments of reinsurance related items may also have a significant impact. While such arrangements may be subject to abuse, they also have a legitimate role in business development and support: for example, they may



relieve the financial strain on the insurer arising from the issue of capital intensive products. Abuses include the manipulation of financial results without significant transfer of risk.

• *Transfer of investment risk*, most commonly in life insurance with regard to interest sensitive life and annuity products, either to take advantage of the reinsurer's asset management capabilities or to avoid undue concentration of assets.





3 Types of reinsurance

3.1 Treaty and Facultative

From a procedural perspective, there are two basic forms of reinsurance: obligatory reinsurance and facultative reinsurance.

• Obligatory reinsurance, where the insurer and reinsurer have in place a formal treaty or agreement for the cession of risks. Key to the treaty is that the insurer is obliged to cede risk to the reinsurer and the reinsurer is obliged to accept those risks from the insurer consistent with the terms of the treaty. In the non-life context, such treaties are typically annual, whereas in life insurance they may be for longer or indefinite periods.

Such insurance is sometimes alternatively known as *automatic* or *treaty reinsurance*.

• *Facultative reinsurance*, when the ceding insurer is free to choose whether or not to offer an individual policy to a reinsurer for reinsurance and the reinsurer is free to choose whether or not to accept the risk. This approach is useful when either the insurer has a sum insured remaining after obligatory reinsurance is exercised or the policy covers risk not included under obligatory reinsurance. Facultative reinsurance is typically used only for larger or more complex risks.

In some cases, combinations or variations on these basic forms may appear, such as *automatic facultative reinsurance*. In this case, a reinsurer accepts certain risks that conform to agreed underwriting criteria. The agreement may require the sharing of such risks by one or both parties or make such risk sharing voluntary. Such arrangements are most commonly seen in the context of life insurance.

From a structural perspective, reinsurance may be either proportional or non-proportional. Both structures may occur in either an obligatory or a facultative context.

3.2 **Proportional reinsurance**,

In this case the insurer and reinsurer share the risk in accordance with a formula that is defined prior to the contingency occurring. The insurer and reinsurer share both the premiums and claims in a way predetermined by a reinsurance treaty. So, for each reinsured risk, the ratio between the risk retained and the risk ceded determines the split of premiums, technical provisions, and claims. Typically, the reinsurer pays reinsurance commissions to reimburse the insurer for agent commissions and other incurred costs.



There are two basic forms of proportional reinsurance: quota share reinsurance and surplus reinsurance. In the case of *quota share reinsurance*, each risk is split between the insurer and reinsurer in a fixed proportion (the quota) of the premiums. In the case of *surplus reinsurance*, the risk in excess of a specified level, or surplus retention limit, of risks underwritten is taken up by the reinsurer (in full).

For life insurance, within the context of proportional reinsurance, there are several common approaches, including:

- (*Traditional*) *coinsurance*, in which the reinsurer receives a proportionate share of all of the risks and cash flows of the policy. Often the policy fee remains with the ceding company. The reinsurer receives its share of the premiums and benefits and sets up its share of the technical provisions. The reinsurer usually pays an allowance (reinsurance commission) to the ceding company to represent the reinsurer's share of the acquisition and maintenance expenses.
- *Modified coinsurance*, which differs from traditional coinsurance in that the assets supporting the technical provisions are held by the ceding company, including the assets supporting the portion of the risk assumed by the reinsurer. The ceding company is required to pay interest that the reinsurer would have earned if it had held the assets corresponding to the technical provisions in its own investment portfolio.
- *Yearly renewable term*, in which the insurer reinsures a specific risk, in exchange for premiums that change from year to year, based on amounts at risk and ages of the policyholders from year to year.

3.3 Non-proportional reinsurance

This also provides protection to the insurer, but the amount of protection depends on the claim amounts on a block of polices rather than on a specific predetermined amount of claims on individual policies. The reinsurer reimburses the insurer for claims in excess of a predefined amount. Non-proportional reinsurance is normally arranged under a treaty, with the premium being expressed as a percentage of the direct premium.

In some cases, profit-sharing arrangements may be built into the policy, such as is common with group life reinsurance.

There are several forms of non-proportional reinsurance. In all cases, the insurer retains the cost of claims up to a certain limit, commonly called the deductible or retention limit:

• *Excess-of-loss reinsurance* covers claims arising from a single event, treating separately each policy affected. Some care may be needed in the case where a



single policy provides cover for multiple claims (such as in liability insurance). Such reinsurance is often termed *working excess-of-loss reinsurance*.

- *Catastrophe reinsurance* covers large claims arising from a single infrequent event, but the claims amount is the aggregate over the group of policies affected.
- *Stop-loss reinsurance* covers all claims arising in a specified period, with the claims amount being the aggregate over the group of policies affected. Stop-loss insurance is rare in practice.

In the context of non-life insurance, the term coinsurance is typically used to mean an arrangement in which a risk is split into separate parts and each part is insured, on identical terms, by separate insurers. Such coinsurance may be arranged by brokers or through an ongoing arrangement between a group of insurers.

In practice, not all risks in excess of a defined retention level are passed from the insurer to a reinsurer, and risks not passed to the reinsurer remain with the insurer. Moreover, insurers may combine different types of reinsurance to address combinations of risks. Usually insurers have a reinsurance program made up of a number of treaties to cover a variety of risks. Such a program may also be supplemented by facultative placements for the more exceptional risks. This introduces a level of complexity into the reinsurance program, as different policies may cover different groups of risks over varying lines of business. It also introduces a risk that there may be inadvertent gaps in the reinsurance cover.

3.4 Order of application

For non-life reinsurance, reinsurance coverage is usually applied in the following order:

- Facultative reinsurance
- Proportional reinsurance (surplus and quota share, but may apply after excess-ofloss or after catastrophe insurance)
- Non-proportional reinsurance, in the following order: excess-of-loss (on net cost of claims after surplus recoveries), catastrophe (on event costs net of surplus and excess-of-loss recoveries), and stop-loss (on net cost of claims after all other recoveries).

For life insurance, reinsurance coverage is usually applied in the following order:

- Obligatory treaties, typically including proportional reinsurance
- Facultative reinsurance
- Non-proportional reinsurance.



Stop-loss treaties are not very common, and automatic facultative treaties are rare in the property-casualty business. These unusual types of treaties may be effective in special circumstances, but the most common treaties are proportional and per occurrence excess treaties. For normal casualty lines, small companies will combine quota share treaties (to increase the number of exposures) with per occurrence excess treaties in various layers. Large companies will forgo the quota share treaties. For property insurance, surplus share treaties and catastrophe covers are the usual ones.

Patterns in the choice of reinsurance covers will change over time and be affected by the state of the reinsurance market. For example, non-proportional contracts give reinsurers greater capacity to manage risk and so can be a feature of hard reinsurance markets.

3.5 Lines and layers

Particularly in non-life reinsurance, where the claim amount may vary significantly and may not be "capped" by a specified amount (for example, liability insurance, asbestos claims, and public liability claims), it is common to express the extent of coverage provided under a reinsurance treaty in terms of "lines" of coverage. Usually a line is a multiple of the retention limit.

So, for example, a surplus reinsurance treaty of five lines over a retention limit of \$50,000 provides coverage of \$250,000 over the retention limit. If the claims exceed \$300,000 (the sum of the retention limit for the insurance and the five lines covered by the reinsurer), then the claim amounts in excess of \$300,000 become the responsibility of the insurer. If a claim may exceed the amount covered by the lines, then the insurer should consider either a further surplus reinsurance treaty, perhaps with another reinsurer, or facultative reinsurance to cover the risk.

Limits on reinsurance coverage provided by a single reinsurer under a particular reinsurance treaty introduce the potential need for insurers to develop more complex reinsurance programs, involving more than one reinsurer, to cover their needs. Different treaties may then cover different "layers" of reinsurance. The reinsurance treaty covering the initial amounts in excess of the retention limit would be called the first layer, and then subsequent treaties would be the second and subsequent layers of reinsurance. The pricing of different layers of reinsurance typically varies due to changes in the underlying profile of the risks insured (as they move toward the tails of the overall risk distributions) and on whether reinsurance markets are hard or soft.

A reinsurance program for a particular insurer may become quite complex and difficult to manage. This highlights the importance of insurers having adequate internal controls on the design and management of their reinsurance programs. The structure of the reinsurance program may vary, depending on the particular lines of business considered.



For life insurance, reinsurance treaties may only cover claims for lives insured with names starting with certain letters of the alphabet (for example, A–K) as a further risk-spreading mechanism. Generally, life reinsurance programs are less complex than non-life ones.

3.6 Alternative risk transfer

Alternative risk transfer covers a range of risk transfer mechanisms that, for some reason (e.g. a special feature in the reinsurance arrangement), are not considered to be traditional reinsurance. Several types of alternative risk transfer products have emerged, including:

- Insurance Linked Securities (ILS), an umbrella term used to describe cessions of insurance risk that are funded by the capital markets. ILSs are often broken down into four loosely defined groups known as "catastrophe bonds" (cat bonds), "collateralised reinsurance", "industry loss warranties" (ILWs) and "sidecars". These four groups, which are not mutually exclusive, focus on different elements of the risk transfer arrangements
- "Cat bonds" take the name from the financial instrument (i.e. a debt security) issued to fund an insurance exposure, usually a catastrophe one.
- The name "collateralised reinsurance" is generally used to highlight the credit risk mitigation feature of certain insurance transactions (i.e. the collateralisation of the insurance exposure).
- "ILWs" refer to a range of financial instruments used by counterparties, which may or may not be insurers, to buy or sell protection related to insurance risks.
- Finally, the label "sidecar" is used for a legal entity created 'on the side' of an insurer and used to transfer insurance risk, usually to the capital markets.
- Hypothetically, there could be a "sidecar" that underwrites insurance risk via an "ILW" and funds the exposure through an issuance of "cat bonds", the proceeds of which are used to "collateralise" the reinsurance risk assumed. Finally, while some ILSs are used in the life and non-life sectors (e.g. cat bonds may be issued to cover property catastrophe risk as much as pandemic risk), it is the non-life sector where this kind of alternative risk transfer has developed the most.
- Contingent or committed capital, in which a contractual commitment is made to provide capital, in the form of senior debt, preferred shares, and so forth, after a specified adverse event triggers the option. The expectation is that the cost of capital will be lower before the contingent event than after. Although potentially a useful means of managing risk, this is not an insurance product.



- *Multiyear or multiline products or multi-trigger products*, in which the users can consolidate risk and combine uncorrelated risks, thus allowing more efficient risk transfer to insurers or reinsurers. The multi-trigger aspect is designed to prevent moral hazard and requires a second event, highly correlated with the insured's financial circumstances, to trigger payments.
- *Structured finance or credit enhancement*, in which the (re)insurer provides some form of financial guarantee to the borrowing institution, lowering its credit costs.

With the exception of finite risk insurance, these products are not considered further here.

3.7 Finite risk reinsurance

Finite risk reinsurance has evolved over time, essentially in the non-life insurance sector.

Finite risk reinsurance is based on the same instruments as traditional reinsurance. It has the following characteristics:

- *Timing risk*. The transfer of underwriting risk and the transfer of timing risk, with emphasis on the time value of money
- *Limited assumption.* Limited assumption of risk by the reinsurer, capping the potential economic downside for the reinsurer
- *Multiyear*. Multiyear period of contracts, providing some smoothing of experience
- Investment income. Explicit inclusion of investment income in the contract
- *Profit sharing*. The sharing of results between the insurer and reinsurer.

An issue that arises in some jurisdictions is whether there is sufficient risk transfer for finite risk reinsurance to be accounted for as reinsurance. For example, the September 11, 2001, terrorist attack in New York City, major accounting scandals, and the weakened state of several high profile insurers and reinsurers raised concerns about finite risk reinsurance and its accounting treatment. These concerns have been reduced, although treatments may vary among jurisdictions. In some cases, "blended" reinsurance covers emerged, combining traditional and finite risk reinsurance. This has the advantage of reinforcing the transfer of risk and of providing more cost effective reinsurance coverage by pooling over both product lines and multiple years.

Insurers commonly engage in our main forms of finite risk reinsurance:

• Loss portfolio transfer (LPT), in which the insurer transfers an existing loss portfolio and associated reserves to the reinsurer. This reinsures the timing risk of the claims being settled more quickly than expected. LPTs also improve the balance sheet



position, especially in the year of writing. By permitting insurers to exit particular lines of business, LPTs can facilitate mergers and acquisitions.

- Adverse development cover (ADC), which protects the insurer against unexpected adverse development of claims provisions that remain with the insurer. This provides protection against adverse incurred but not reported (IBNR) and incurred but not enough reported (IBNER) events. ADCs also improve balance sheet position, facilitate mergers and acquisitions, and may improve access to traditional excess covers.
- *Finite quota share (FQS)*, which is similar to traditional quota share but addresses the insurer's financial needs more effectively. The insurer cedes part of its unearned premium provision and in return receives a reinsurance commission. This provides smoother financial results for the insurer, increased and stabilised underwriting capacity, and assistance with solvency requirements.
- *Spread loss treaty (SLT)*, which provides the insurer with more stable capacities and prices due to the multiyear nature of the contract. The insurer pays a specified premium into an "experience" account held by the reinsurer. At the end of the term, the experience account is settled. This smooths results for the insurer, reduces variability in underwriting, transfers timing risk, and stabilises reinsurance.

3.8 Retrocessions

A reinsurer may itself choose to spread risk further to other reinsurers. Such a process is called retrocession. In principle, retrocessions further diversify risk.

However, in practice, some issues can make retrocession less beneficial. It is often the case that reinsurance arrangements are not "look through" in the sense that a reinsurer may not disclose to an insurer where its retrocessions may be placed. As a consequence there is the possibility of a risk going through a "spiral" among a group of reinsurers and, ultimately, at least in part, unknowingly being passed back to the original insurer. A well-known example of a reinsurance spiral is the London market excess spiral of the 1980s, which either caused or contributed to the failure of several reinsurance companies in the early 1990s.

Although it may be difficult to assess the risk of reinsurance spirals, this suggests that an assessment of immediate reinsurers alone may not be adequate. Some understanding of the retrocession policies of reinsurers, as well as an assessment of the breadth of retrocession markets, can be helpful. In markets where the number of reinsurers is limited, the risk of reinsurance spirals may be increased.

Similarly, for an insurer dealing with both inward and outward reinsurance, inward reinsurance can bring the risk of retaking on its own risk without intending to: the insurer sells the initial



business, keeps the retention, reinsures, and then gets back some of the reinsured risk, either directly from the reinsurer or indirectly through a more complex loop.

3.9 Government sponsored pools

There are certain perils, for example, floods or other natural disasters, or terrorism that generate risks that are unlike other risks. They may be extremely severe and extremely infrequent; in some cases, there is no precedent. They may not have the random nature typical of other risks, like in the case of terrorism. Often, protection from these risks is provided by government sponsored pools.

Motivations behind government pools vary by jurisdiction. In the US, for example, some pools have arisen in the face of market failure of private sector insurance following a significant natural disaster or, in the case of terrorism risk, the motivation was to address the uninsurability emerging from the September 11 2001 terrorist attacks. In general government concerns relate to provision of affordable insurance and/or to the provision of insurance in the absence of a market for it. Government pools have certain advantages over the private sector including their ability to raise funds post-event, but face financial unsustainability given, for example, political intervention to maintain affordability of cover in high-risk areas.

Examples of government sponsored pools include:

- Natural Disasters:
- The Mexican *Programa MultiCat México*, that covers risks from hurricanes and earthquakes, and operational since 2009. MultiCat was jointly developed by Mexico and the World Bank and covers not only losses emerging from property damage but also post-event emergency costs. MultiCat is funded by ILSs (i.e. cat bonds), described in Section 3.1 above
- The *Caribbean Catastrophe Risk Insurance Facility* (CCRIF) a regional risk pooling facility that offers parametric insurance designed to limit the financial impact of catastrophic tropical cyclones, earthquakes and excess rainfall events on Caribbean governments. CCRIF was created in 2007 and like MultiCat, it counted with the support of the World Bank. Also, like MultiCat, CCRIF is funded by ILSs (i.e. cat bonds), described in Section 3.1 above
- The *African Risk Capacity* (ARC) offers, among other things, insurance coverage for drought, cyclone and flood to member countries. ARC has been active since 2012 and over the years in excess of 30 African counties have become members.
- The USA *National Flood Insurance Program* (NFIP), created in 1969 and administered by the Federal Emergency Management Agency (FEMA). NFIP cover damages from floods.



- Also, at state level, other US programmes include:
- The *Texas Windstorm Insurance Association* (TWIA), originally created in 1972 and offering windstorm and hail insurance. TWIA also funds part of its exposure via cat bonds
- The *Texas Catastrophe Reserve Trust Fund* (CRTF), established in 1993 and providing property catastrophe insurance on natural disasters
- The *Florida Hurricane Catastrophe Fund* (FHCF), established in1993 and providing property insurance on natural disasters. FHCF also funds part of its exposure via cat bonds
- The *California Earthquake Authority* (CEA), established in1996 and providing both property and casualty insurance on earthquakes. CEA also funds part of its exposure via cat bonds
- The *New Zealand Earthquake Commission* (EQC), covering losses from hurricanes, tsunamis and volcanic eruptions amongst others.
- The *Turkish Catastrophe Insurance Pool* (TCIP) that has been offering earthquake insurance since 2015. TCIP also funds part of its exposure via cat bonds
- Terrorism:
- The Australian Reinsurance Pool Corporation (ARPC), established in 2003
- The Belgian Terrorism and Reinsurance Pool (TRIP), operational since 2008
- The Danish Terrorism Insurance Pool for Non-Life Insurance (TIPNLI), operational since 2010
- The French Gestion de l'assurance et de la Réassurance des Risques Attentats et Actes de Terrorisme (GAREAT) and Caisse Centrale de Réassurance (CCR) of 2002 and 1946 respectively
- The German Extremus Versicherungs-AG, operational since 2002
- The Israeli Compensation Fund according to the Israeli Property Tax Act of 1941
- The Dutch Nederlandse Herverzekeringsmaat schappij voor Terrorismeschaden N.V. (NHT), operational since 2003
- The Spanish Consorcio de Compensacion de Seguros (CCS), of 1941
- The British Pool Reinsurance Company Limited (Pool RE), of 1993
- The USA Terrorism Risk Insurance Program (TRIP), of 2002


Exercises

- Ex 1 Identify and explain the differences between proportional and nonproportional reinsurance and the main types of reinsurance in each of these categories.
- Ex 2 Explain how finite risk reinsurance may differ from traditional reinsurance.



4 Levels of retention

4.1 Balancing risks

In general, insurers do not seek to transfer more risk to reinsurers than is efficient for capital purposes. The decision regarding the efficient or optimal level of retention for an insurer is often complex and subject to judgment; it can change over time as business objectives and conditions vary. There is a balance to be drawn between the cost of the reinsurance cover and the capital required to support the portfolio.

On the one hand, the desirable amount of retention depends on three elements: (a) the insurer's current level of risk aversion (usually measured by a certain probability of failure, over a fixed time period, that the board of the insurer approves as acceptable, such as a probability of failure of 0.1 percent over one year), (b) the amount of capital the insurer is prepared to put at risk to support the portfolio, and (c) the variability of claims results expected from the portfolio, in terms of both size and time of occurrence.

On the other hand, the desired level of retention needs to be balanced against (a) the cost of the reinsurance cover considered desirable, (b) the availability of the desired cover, (c) practical issues in implementing the desired cover, and (d) any minimum retention criteria.

Insurers and reinsurers may set "per risk" and "per event" risk retention limits as well as consider blocks of business in aggregate.

Ideally, among other things, risk retention should be related to the ability of the insurer to access relatively liquid funds (noting that tangible assets may include illiquid assets).

A standard approach is to assess the level of retention required for a "typical" insurer—the "base" retention—and then to adjust this to apply to different classes of business and to determine more appropriate retention levels for a particular insurer.

Theoretical approaches to assessing retention levels generally depend on the mathematics of risk theory and are based on established actuarial models. The mathematics involved can get complex quickly and are outside the scope of this module.

4.2 Market practice

In practice it is not always possible to apply theoretical approaches—for example, due to inadequate data, particularly in the case of reinsurers. Approximations, experience, established practice, and judgment can all play a major role in the assessment and pricing of reinsurance cover.

• Prices quoted for reinsurance cover may vary for a number of reasons, including:



- The reinsurer's willingness to do business with a particular insured
- The reinsurer's willingness to offer a particular type of coverage
- The general reinsurance marketplace and competitive issues
- The amount of claims variation cover inherent in the reinsurance risk transfer.

Reinsurers are generally reluctant to provide unlimited coverage, except for statutory classes of business, such as workers' compensation and motor bodily injury, where the insurer is required to provide unlimited cover. Unless additional layers of cover are put in place, risks in excess of the reinsurance limit are the responsibility of the insurer.

For the main classes of reinsurance, the following limits generally apply:

- *Quota share*. Limits are seldom imposed.
- *Surplus*. The overall limit is often a matter of administrative convenience, based on the business the insurer expects to write, and may be coupled with facultative cover.
- *Excess of loss.* The overall limit is driven by the maximum sum insured or the probable maximum loss (PML), which may be assessed by the insurer or based on industry data and discussions. An understanding of the assumptions and processes used to set the probable maximum loss is usually central to the understanding of reinsurance programs.
- *Catastrophe*. The limits may be based either on industry practice and analyses or on rules of thumb. A pragmatic approach proposes that the catastrophe limit is between two and four times the probable maximum loss for a catastrophe zone.

In all cases, depending on the size of the portfolios and other insurer specific needs, comparing the limits of retention and reinsurance cover with industry practice is a useful starting point for reviewing a particular insurer's retention limits. Catastrophic exposures

4.3 Catastrophe retentions

The theoretical approach to setting catastrophe retentions is the same as that used to set excess-of-loss retentions. However, since the risks involved are in the (extreme) tails of the claims distributions and these distributions are poorly understood, it is common to rely on judgment and assumptions regarding experience in setting catastrophe retentions. A rough rule of thumb is that catastrophe retentions are often set at two to five times the basic excessof-loss retention level, with the lower multiple usually being associated with higher basic retentions.



Catastrophe covers generally have quite tight definitions of what constitutes an event, particularly regarding the time frame of an event; they clearly specify the number of claims required before the cover is triggered. As with other insurance and reinsurance cover, catastrophe covers may contain limits to their continuity or the number of events claimable before the cover ceases.

Because the reinsurer is taking on the more extreme variability of result in the typically poorly understood tails of claims distributions, catastrophe cover may be relatively expensive.

4.4 Minimum levels of retention

The reinsurer must consider not only the ongoing business objectives of the insurer but also the question of "moral hazard" if the insurer retains only a small portion of the risk. See the discussion of "fronting." Consequently it is common for reinsurers to insist, as a matter of prudence, that insurers retain a "reasonable" amount of their underwritten risks. There are no fixed rules regarding appropriate minimum retention levels, and these may vary depending on the circumstances of the individual insurer.

Exercise

Ex 3 What types of reinsurance are most commonly used in your jurisdiction, and what are the average levels of retention over the last five years?



5 Impact of reinsurance and risk transfer

5.1 Accounting treatment

The accounting treatment applied is of crucial importance to assessing the financial impact of reinsurance. Different accounting treatments may lead to significantly different reported financial results. Further, the accounting treatment of reinsurance arrangements may well flow through and affect income tax calculations.

Accounting standards may lead to the development of products specifically designed to take advantage of specified accounting treatments. As an example, U.S. statutory accounting does not allow immediate recognition of the equity in unearned premium provisions. Consequently, some insurers purchase proportional reinsurance treaties with ceding commissions as a surplus relief mechanism. Also, U.S. statutory accounting does not allow discounting of claims provisions, which creates an incentive to achieve the effect of discounting indirectly through the purchase of claims portfolio transfers.

There is an argument that insurance business, especially long tailed business, which remains in place over a number of years and accounting periods and has significantly uncertain cash flows, is not always well served by accounting practices that presume that all transactions are short term and have a measure of certainty. The issues around matching and spreading or smoothing transactions over a number of years can be significant and generate material issues.

In general, accounting standards must be followed, and insurers and supervisors rely both on the financial results provided and on the external audit typically required. Accounting standards evolve over time to reflect changes in environment and practice. It is an ongoing responsibility of insurers and reinsurers to remain abreast of developments and current professional standards.

In the context of insurance and reinsurance, the underlying accounting principles can be listed as follows:

- *Premiums*. Premiums are recognised from the risk attachment date, and the revenue earned is measured over the period of insurance in accordance with the incidence of the risk.
- *Expenses.* Premiums ceded to reinsurers are recognised as an outward reinsurance expense in accord with the pattern of reinsurance service.
- *Gross reporting.* Accounting for insurance and reinsurance transactions should be on a gross basis.



- *Liability recognition.* Technical provisions for outstanding claims are recognised for direct and inward reinsurance business and are measured as the present value of expected future payments.
- *Claims recoveries.* Anticipated claims recoveries from reinsurers are recognised as assets where the amounts can be measured reliably and calculated as the present value of the expected future receipts.

Recognition generally is on an accrued basis for premiums, on a policy or claim admitted basis for technical provisions, and on a received basis for claim payments. There is inherent uncertainty in the assessment of future claims, and this uncertainty increases the further into the future the finalisation of the claim is likely to be.

In order to apply these principles to an insurance transaction, the purported reinsurance arrangement needs to satisfy a test that a significant transfer of risk has been involved in the transaction. It is generally accepted that risk in this context includes both underwriting and timing risks, but it may not include investment risks. Risk also implies an expectation of a reasonable range of outcomes, which cannot be biased by the affected participants, from the transaction. The key to the test is the meaning or interpretation of the word significant.

Some jurisdictions (for example, the United States) have taken a more black-letter law approach and established a specific benchmark to determine whether significant risk is transferred. This test indicates that significant, or material, risk transfer has taken place if there is at least a 10 percent probability of at least a 10 percent loss by the reinsurer, with specific consideration of catastrophe risk, which does not have a 10 percent probability of occurrence. No matter what rules are in place, it is hard to sustain a position that 10 percent of 10 percent—namely, 1 percent—of a risk is a significant transfer of risk. A further potential difficulty is that such an approach creates an arbitrage point for players to move around and seek to subvert, in intent if not in form. Also, the assessment of such probabilities from the actuarial perspective cannot be exact, as they reflect the impact of future experience, which can be estimated but not known.

Other countries may take a more principles based approach aimed at assessing the intent and economic outcomes of the transaction (a "look through" approach). Also, in some countries supervisors may have to approve reinsurance arrangements before they are put in place and reserve the right to vary or void an arrangement after its inception. In principle, while valid arguments may be advanced in favour of such an approach, it may carry an element of moral hazard for the supervisor. If there is an adverse outcome, the supervisor may be blamed for a decision that should have been made by the insurer's board and management.

If a transaction is not treated as reinsurance, it will be treated as a "funding" contract, meaning, effectively, as a loan. Ideally, a zero result should then be achieved, implying that discounting is being applied to the future claim recovery payments. The importance of allowing a



transaction to be treated as reinsurance can be seen in the following example regarding nonlife insurance, which is relevant to a jurisdiction that does not permit the use of discounting when calculating technical provisions.

If a deposit is paid in return for a sequence of future payments derived from the invested premium, then, if properly accounted for in terms of present values, the contract should achieve essentially a zero result on the balance sheet at inception. However, treating the premium as reinsurance and the future "recovery" payments, at face value, as recovery payments leads to an apparent immediate increase in the insurer's solvency position. This occurs because premium income, net of reinsurance, is reduced, but net outstanding claims are reduced at the significantly higher undiscounted face value of the future recoveries.

The issues around whether a proposed arrangement may be treated and accounted for as reinsurance have been highlighted by the growing prevalence of financial reinsurance and some recent incidents in which reinsurance contributed to the failure of the insurer. In many cases, the insurer and reinsurer entered into a reinsurance arrangement in order to engage in a form of regulatory arbitrage, with the transaction being viewed as a transfer of risk and providing the associated accounting relief in the insurer's jurisdiction, but with the reinsurer's jurisdiction not viewing the transaction as involving a transfer of risk. As a result, no liability or capital requirements are ultimately created.

As insurance and reinsurance are generally accounted for under the same principles, most of the issues discussed here for reinsurance also arise in the context of standard insurance.

5.2 Effect on insurer's financial position

Reinsurance, and other risk transfer mechanisms, can affect an insurer's reported financial results and capital management. Indeed, reinsurance arrangements provide capital adequacy assistance to an insurer's financial position.

Approaches taken to understand the financial effects of reinsurance include:

- *Ratios.* It is common to use ratios to provide a foundation for this analysis and resulting conclusions. Specific ratios for reinsurance include: cession and retention rates (the proportion of gross premiums ceded or retained by the insurer), maximum event ratios (the extent to which the insurer holds capital to cover such events; if not, the insurer may be at risk, which puts the appropriateness of the reinsurance program in question), and reinsurance recoveries (expected claims recoveries relative to net technical provisions).
- *Trends*. Insight can be gained from examining the trends in an insurer's results over time.



- Assessment of position excluding reinsurance. Using reinsurance related information explicitly provided, ratios and other analyses are recomputed removing the impact of the reinsurance entries. Comparison of the ratios, including and excluding reinsurance, may, particularly if results "straddle" minimum or key values (for example, whether operating profits are positive or negative), provide focus for further investigation of the insurer.
- *Reflection of credit risk assessment*. To reflect the possible impact of credit risk of a reinsurer, ratios may be recomputed to reflect the potential default by the reinsurer on some expected claims obligations.

The impact of reinsurance in an insurer's financial statement should be considered in the context other specific circumstances of the insurer. For example, small and newly established insurers face different challenges than larger and better established insurers. Different product lines have different risk characteristics, and, particularly for new products (either to the insurer in particular or to the market overall), high levels of reinsurance may be appropriate. These comments apply equally to reinsurers when assessing the impact of retrocessions.

5.3 Appropriateness of a reinsurance strategy and program

The insurer is responsible for establishing its reinsurance program. A number of elements help understand the soundness of an insurer's reinsurance strategy and program, including:

- Insurer's position, in particular the insurer's risk profile, business, exposure, retention level, and structure. This means considering the insurer's risk profile, risk tolerance, and available capital, the nature and extent of its gross business (such as the spread of business by geography and business class, which may be particularly important in the context of catastrophe covers), and the distribution of its exposure to identify large potential claims. Regarding retention level, this means considering the optimisation of retention levels for reinsurance programs in terms of costs and benefits, which is generally a complex matter in practice even if theoretically possible.
- Practical constraints, which imply that judgment is required in determining a good reinsurance program, include matters such as the need to work within the context of an established program, maintain continuity and long-term relationships with reinsurers, obtain sufficient detailed pricing information from reinsurers, and consider the impact of reinsurance pricing cycles and availability. Considering the structure of reinsurance programs means considering matters such as the choice of reinsurer, type of reinsurance, and diversification of reinsurance business among reinsurers.



- *Insurer's reinsurance governance processes.* The board of directors and senior management are responsible for governance. The board of directors reviews and approves the insurer's reinsurance strategy in the context of its risk profile, capital, and business plans. This should include strategies for:
- Managing and monitoring the reinsurance program
- Ensuring compliance with relevant legal and supervisory requirements
- Setting appropriate risk limits.
- Senior management implements the reinsurance strategy, including matters such as:
- Ensuring that clear policies, procedures, and internal controls are established and maintained
- Setting and approving specific program structures and limits
- Ensuring appropriate, accurate, and timely reporting
- Ensuring the presence of appropriate systems and processes of internal control to govern the interaction of the insurer with the reinsurer(s) with regard to reinsurance transactions. Such systems should be regularly reviewed.
- *Impact of external standards.* External standards affect the reported financial position and business management of insurers. Issues to consider include, but are not limited to, accounting standards and income tax. Accounting standards evolve over time and may not support long-term risk transfer. Such issues may be of heightened interest once the new international accounting standards are introduced, as expected in many countries over the next few years.
- For example, the proposal to prohibit equalisation and catastrophe reserves may be significant, especially for reinsurers. The treatment of items for income tax purposes can significantly affect the insurer's management decisions. In the context of reinsurance, it may affect the levels and types of reinsurance covers put in place.

Finally, changes in reinsurance capacity can also affect the capacity of direct insurers. That is, insurers may assume incorrectly that consistent reinsurance capacity will always be available; they need to ensure they are not overly exposed to the impact of a sudden reduction in reinsurance capacity. In an extreme, as happened after the September 11 terrorist attacks, this may result in a significant withdrawal of capacity from direct markets.



Exercise

Ex 4 Confirm how reinsurance arrangements are treated for accounting purposes in your jurisdiction. Explain why it may be to the disadvantage of an insurer if a purported reinsurance arrangement is not accounted for as reinsurance.



6 Security of reinsurance

From the perspective of an insurer, security of reinsurance can be viewed in terms of the appropriateness of placing business with the reinsurer. As noted, the insurer is responsible for conducting appropriate risk assessment and assuring itself of the financial soundness of the reinsurer. In managing the security of reinsurance, insurers should consider:

- *Consistency of approach.* Appropriate and up-to-date board and senior management reinsurance strategies must be consistent with the insurer's risk appetite and approach and be reflected in reinsurance contracts.
- *Legal and statutory framework.* Understanding the framework is especially important if the reinsurer is not domiciled in the same jurisdiction as the insurer.
- *Financial assessment*. Appropriate and documented criteria are needed to assess the financial condition and credit risk of reinsurers.
- Business practices. It is important to understand the reinsurer's underwriting and claims practices (understanding the underwriting and claims policies and procedures of the reinsurer and how they will integrate with the insurer's practices and reporting), the use of alternative risk transfer tools, and the investment policy, including the use of derivatives.
- *Management*. It is important to evaluate the expertise, quality, and stability of management of the reinsurer.
- *Structural indicators.* Indicators of importance include ownership structures, affiliates, and group (assessment of any affiliated companies and other members of any group to which the reinsurer belongs).

Reinsurers should apply similar criteria when considering retrocessions.

6.1 Outsourcing

The general issues involved with the management and assessment of outsourcing apply in the case of reinsurance as well. Typically, reinsurance treaties seek to cover many of the issues involved with outsourcing in the context of reinsurance.



Exercise

Ex 5 What considerations should be taken into account and processes put in place by insurers (and so considered by supervisors) to manage reinsurance arrangements from the perspective of considering reinsurance as an outsourced service?

6.2 **Operational risks**

It is not uncommon for insurers to give the management of reinsurance matters a relatively low priority. Symptoms of the low priority accorded reinsurance matters include delays in the completion and signing of reinsurance treaties, poor administrative practices, and weak systems for reinsurance (for example, poor or manual reporting processes).

Although board or other high level approval or consideration may be needed for reinsurance matters and policies, it is a separate matter to ensure that the approved policies are implemented adequately and appropriately.



7 Failures and reinsurance

Insurers and reinsurers can, and do, run into financial problems. When an insurer or a reinsurer ceases to meet certain regulatory requirements like capital and surplus requirements or other financial conditions requirements, supervisors designate them as 'financially impaired insurers'. Impairments may be successfully addresses or not. If unaddressed the insurer may be liquidated. Looking at insurer's impairments and liquidations may provide a valid indication of the prevalence of the matter in the market.

7.1 Insurer failure

A longitudinal study by credit rating agency A.M. Best looking at impairments and liquidations among insurers rated by it found that over the period 1978 to 2015 a total of 761 cases of insurers, including reinsurers, that at some point were designated as impaired¹. The table below provides detailed of this:

Years	No. of Impairments	% of Total Impairments	
1978 - 1979	14	1.8% 2.0% 3.0%	
1980 - 1981	15		
1982 - 1983	23		
1984 - 1985	57	7.5%	
1986 - 1987	50 64	6.6%	
1988 - 1989		8.4%	
1990 - 1991	92	12.1%	
1992 - 1993	62	8.1%	
1994 - 1995	34	4.5%	
1996 - 1997	50	6.6%	
1998 - 1999	45	5.9%	
2000 - 2001	76	10.0%	
2002 - 2003	76	10.0%	
2004 - 2005	20	2.6%	
2006 - 2007	16	2.1%	
2008 - 2009	23	3.0%	
2010 - 2011	17	2.2%	
2012 - 2013	13	1.7%	
2014 - 2015	14	1.8%	
Total	761	100.0%	

¹ A.m. Best (2016) Best's Impairment and Rating Transition Study: 1977 – 2015.



The data above was drawn from a pool of 5,183 insurers, including reinsurers, that A.M. Best rated during the period. It is interesting to note that the period 1984 – 1993 represent one of heavy impairments, peaking in 1990 – 1991, with 92 impairments, or 12% of all impairments. A.M. Best attributes this circumstance to life and health insurers' purchases of junk bonds and commercial mortgage holdings and to property and casualty insurers' exposure to catastrophic losses.

Analysis of the 1978-2015 impairment dataset shows that when looked at average cumulative impairment rate over 15 year periods, rates vary dramatically depending on the rating of the insurers. For example, over 25 years while, the average cumulative impairment rate of an A+ rated insurer appears to be of 6.69%, the same indicator increases to 19.32% for a B+ rated carrier and to 40.47% for a C+ rated insurers.

AM Best also looked at the share of insurers that fail to address the causes of impairment and were liquidated. In this respect, and following the example of the A+ rated insurer above, average cumulative liquidation rate appears to be of 1.62%. This figure grows to 6.30% for B+ rated insurers and 13.80% for C+ rated insurers.

In addition to the prevalence of impairment or liquidation, it is important to understand the causes underlying these phenomena. At a summary level, perhaps 5–10 percent of insurer failures can be attributed to the failure of reinsurance in some form, and perhaps up to a further 5–10 percent can be attributed to causes (in particular, catastrophes) that could, or perhaps should in retrospect, have been reinsured.

From the reinsurance perspective, a couple of comments are relevant. The primary cause of insurer failures appears to be inadequate management and inadequate internal controls in the great majority of cases. Moreover, reinsurance risk appears to be a common trigger for problems.

7.2 Reinsurer Failure

From the reinsurer perspective, causes of failures include the following:

- Insufficient capital
- Insufficient IBNR or other technical provisions
- Fraud
- Catastrophic events
- Poor underwriting
- Over exposure to a high-risk market
- Risky assets



- Mismanagement
- Default of retrocessionaire



8 Abuses of reinsurance

An example of an abuse of reinsurance is "fronting," where an insurer, often with minimal capital of its own, is established with a view to reinsuring the great bulk of the risks underwritten. This type of arrangement poses several significant problems:

- No incentive for the direct insurer. There is moral hazard in that the direct insurer has no or little incentive to underwrite or administer claims properly, as reinsurance commissions probably outweigh any losses that may arise from the low level of retention.
- *Inappropriate ownership structure*. Major problems may arise when the reinsurer also owns the fronting company or vice versa.

An incentive for fronting may be an agent or broker seeking to capture not only commissions but also reinsurance profits, without the usual capital requirements or skills and experience to deal with adverse experience. In the event of a failure by the reinsurer, the full obligation for the direct insurance contracts reverts back to the insurer.

A review of retention levels is the key to detecting and addressing fronting. In general, reinsurers expect insurers to retain a significant amount of risk in order to provide an incentive to manage their insured business well, and there may also be supervisory constraints on the level of retention required. In general, insurers tend to seek to develop long-term relationships with their reinsurers.

Reinsurance issues have been involved in a number of high profile failures, and some are noted here:

- *HIH Group in Australia.* The HIH Royal Commission has established the role of abuses of reinsurance and financial reinsurance agreements in the failure of HIH Group in 2001. The situation was compounded by the existence of "side letters," unknown to the supervisor and other parties. These voided some of the terms of the treaty. Also, the directors of the company may have been unaware of the side letters, calling into question the quality of the overall corporate governance of HIH. There is a large CC Case study which discusses HIH.)
- *Gerling in the United States.* Gerling's U.S. subsidiaries failed due to credit losses, the September 11 terrorist attacks, and asbestos losses. Gerling's other reinsurance subsidiaries provided support, which, in turn, caused them to fail, even though they raised additional capital. This illustrates the risk of group contagion.
- Independent Insurance Company Limited in the United Kingdom. This significant and fast growing non-life insurer closed to new business in June 2001 and went into receivership. While the major cause of its demise appears to be under



reserving, some of the company's reinsurance arrangements appear to have been questionable.

- *Reliance National in the United States.* This insurer fronted large amounts of workers' compensation carve-out business. A reinsurance spiral behind it collapsed, leaving the company unable to pay claims. The subsequent loss of reputation then caused healthy non U.S. companies in the group to fail.
- *Cardinal Insurance in the United States.* This insurer obtained stop-loss cover at very low premium rates, virtually ensuring that it made a profit no matter how bad the business experience. The reinsurer argued that the reinsurance cover was obtained in a fraudulent way and did not pay the claims. Cardinal was liquidated.

Exercise

Ex 6 Explain why "fronting" has the potential to lead to abuse of reinsurance arrangements.



9 Reinsurance contracts

Reinsurance treaties should satisfy the standard requirements of contracts as well as address the particular needs of the specific reinsurance arrangement under consideration. This includes immediate matters such as having good records of treaties and ensuring that all current treaties are properly signed and executed.

9.1 Contract Content

At a summary level, reinsurance treaties should address the following broad areas:

- The details of parties
- Business line(s) covered, including limits and exclusions
- Premiums and commissions
- Management of changes in policies covered, such as changes in sums insured under inflation clauses
- Reporting between the parties
- Claims requirements and processes
- Profit-sharing arrangements, where applicable
- Arbitration in case of dispute, for example, through differing interpretations of a treaty or omission of information in a treaty
- Governing laws
- Accounting criteria
- Termination conditions, ensuring that the conditions of termination are clear because, particularly in the case of life insurance, they may refer only to new business or may involve the recapture of existing business previously placed with the reinsurer.

Some template reinsurance contracts are publicly available. A review of these templates shows some of the complexities involved in establishing clear and comprehensive reinsurance arrangements.

9.2 Timing

Especially when insurers or reinsurers are in difficulty or have failed, the clarity and completeness of documentation supporting reinsurance arrangements become increasingly important. However, in general business practice, clear and complete documentation is



considered good practice and should emerge as a result of good corporate governance processes.

9.3 Life and non-life reinsurance contracts

The discussions in this module are applicable to both life and non-life insurance unless specifically indicated otherwise. Several differences have been noted:

• *Reinsurance program structure*. Life reinsurance treaties tend to cover indefinite periods, and the termination conditions affect new business only, whereas non-life reinsurance arrangements traditionally last for one year and cover only a specific line of business.

This increases the importance, for non-life reinsurance, of ensuring that proper documentation, such as cover notes, is in place. Facultative reinsurance is more common for life insurance. The term "coinsurance" has very different meanings in the context of life and non-life reinsurance, as may the usual order of application of reinsurance cover. The use of layers is common in non-life insurance, but not in life insurance.

• *Product structure*. Many life insurance products, especially traditional whole-of-life and endowment products, have high initial expenses that are expected to be recouped over the later years of the contract. This can lead to initial capital strain for life insurers. Reinsurance may alleviate some of this initial capital strain.

This phenomenon is not as pronounced with non-life insurance, in which one year insurance contracts predominate.

- *Finite risk and alternative risk transfer.* While more recent developments in reinsurance can be used in the context of life insurance, they have developed primarily in the non-life context.
- Supervisory regimes and practices. Legislative requirements, actuarial approaches, and industry practices vary between life and non-life insurance and hence are reflected in reinsurance considerations. This is not surprising given the nature of the risks covered.
- *Retention levels.* Industry retention levels, in general, are significantly higher in life insurance than in non-life insurance. This reflects the increased heterogeneity of non-life insurance risks as well as the increased volatility of non-life insurance risks.
- *Credit risk*. Reinsurance failures of some type are a significant, although not the most likely, cause of failures of insurers, particularly for non-life insurance.



• *Complexity, volatility, and change.* As a general comment, the role of reinsurance is more important, more complex, and more subject to change and volatility in the non-life than in the life insurance industry. The non-life insurance, and so reinsurance, industry is more subject to changes in expectation, legislation, and volatility in potential claims than the life insurance industry. As a specific example, consider the ongoing risks and issues relating to the past use of asbestos.





10 Further reading

10.1 General sources

Many texts are available which are relevant to the material in this module. These texts may also go beyond the scope of this module, but usually include introductory chapters on the basic topics.

When reading these texts it is useful to consider the principles being as well as the details of their application in a particular environment. Also, it is important to recognise that as the environment changes the relative importance of issues may also change.

Other sources of information are also available. For example, in many countries there is an insurance institute of some form. The Chartered Insurance Institute (CII), based in England, provides a range of good educational programs and has links to more than 70 other insurance institutes worldwide (see <u>www.cii.co.uk</u>).

In some cases, supervisory websites are also valuable sources of information. This can be particularly the case when supervisors publish explanatory information explaining their requirements and approaches.



11 Review questions

- R1 Outline the benefits that may be achieved by an insurer implementing an effective reinsurance program.
- R2 The law of large numbers justifies the use of insurance to pool risks. Extend this to justify the use of reinsurance, despite the need for reinsurers to hold capital.



Appendix 1: Answers to Exercises and Review questions

Exercises

- Answer 1 With proportional reinsurance, the insurer and reinsurer share the risk in accordance with a formula that is defined prior to the contingency occurring. The main types of proportional reinsurance are (traditional) coinsurance, modified coinsurance, and yearly renewable term. Non-proportional reinsurance provides protection to the insurer, but the amount of protection depends on the claim amounts on a block of polices rather than on a predetermined amount of claims on individual policies. The main types of non-proportional reinsurance are excess-of-loss, catastrophe, and stop-loss reinsurance.
- Answer 2 Finite risk is based on the same instruments as traditional reinsurance, but may differ with respect to the following factors: timing risk (the transfer of underwriting risk and the transfer of timing risk, with emphasis on the time value of money); limited assumption of risk by the reinsurer (caps on the potential economic downside for the reinsurer); multiyear period of contracts (provision of some smoothing of experience); investment income (explicit inclusion of investment income in the contract); and profit sharing (the sharing of results between the insurer and reinsurer).
- Answer 3 Consult with colleagues regarding the types of reinsurance most commonly used in your jurisdiction and the levels of retention (information may also be collected through regulatory returns or other reports).
- Answer 4 Consult with colleagues or review local accounting standards to determine how reinsurance arrangements are treated for accounting purposes in your jurisdiction. The accounting treatment applied is of crucial importance to assessing the financial impact of reinsurance. Different accounting treatments may lead to significantly different reported financial results. Further, the accounting treatment of reinsurance arrangements may well flow through and affect income tax calculations. Accordingly, an insurer's financial results may appear unfavourable, or the insurer may need to pay higher income tax if a purported reinsurance arrangement is not accounted for as reinsurance.
- Answer 5 The general issues involved with the management and assessment of outsourcing apply in the case of reinsurance as well. An insurer remains responsible for meeting its obligations to policyholders, even where it has outsourced functions to others. Adequate controls should exist to ensure that the functions are performed properly. Contingency plans should be in place to deal with the potential failure of the service provider. Typically, reinsurance treaties seek to cover many of the issues involved with outsourcing in the context of reinsurance.



Answer 6 Fronting can lead to significant problems because the direct insurer may have no or little incentive to underwrite or administer claims properly, as reinsurance commissions probably outweigh any losses that may arise from the low level of retention. Fronting is often accompanied by an inappropriate ownership structure, for example, where the reinsurer also owns the fronting company or vice versa. In such cases, the control on risk taking that arises from the independent evaluation of risk by the parties to an arm's length business transaction will be absent.

Review questions

- Answer 1 Possible benefits of a reinsurance program include diversification of underwritten risk, increase in new business capacity, access to expertise, opportunity to divest a product line, ability to manage financial results, and transfer of investment risk.
- Answer 2 The pooling of (similar) risks reduces the variability of the overall outcome. In the same way that insurance provides a means for policyholders to manage their risks, reinsurance provides a means for insurers to manage their risks. In particular, reinsurance offers an opportunity for ceding companies to cede risks or portions of risks that are outliers, thus increasing the homogeneity of their retained (net) insurance portfolios.



Core Curriculum for Insurance Supervisors

Module 5.1.1 Reinsurance

Further information

Web: <u>www.iaisweb.org</u>

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Core Curriculum for Insurance Supervisors

Module 5.6.1

Solvency - Principles and structures

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Version

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Using the Core Curriculum

Purpose

The IAIS Insurance Core Principles (ICPs) provide a globally accepted framework for the supervision of the insurance sector. The ICPs are suitable to apply to insurance supervision in all jurisdictions regardless of the level of development or sophistication of the insurance markets and the type of insurance products or services supervised.

The Core Curriculum provides non-commercial training materials to support insurance supervisors as they implement the ICPs. They give insight and background to the ICPs and the concepts underlying them. There is also a focus on the practical application of supervisory concepts.

Supervisory practices are constantly evolving reflecting experience and changing environments. Consequently, Core Curriculum materials should not be read as providing 'the answer' to a particular issue, but as providing guidance, approaches and matters to be considered by supervisors when they address specific issues in their own particular context.

Audience

The key users of the Core Curriculum material include:

- Trainers of insurance supervisors
- Individual insurance supervisors, and
- Other parties interested in sound and effective regulatory and supervisory practices.

Link document

The Core Curriculum Link document provides a mapping between the ICPs and the Core Curriculum modules. As ICPs and/or the Core Curriculum modules evolve, their relationship is described by the Link document (see <u>www.iaisweb.org</u>). This allows users to navigate from ICPs to relevant Core Curriculum modules and in the opposite direction.

Learning advice

Different users have different needs and so will use the Core Curriculum modules in different ways. The Core Curriculum Learning advice document provides users with suggestions on using Core Curriculum materials to meet a variety of needs. You are recommended to use the Learning advice document (see <u>www.iaisweb.org</u>) to support your use of the Core Curriculum modules.



This module

Summary

The purpose of this Core Curriculum module, 5.6.1 Solvency - Principles and structures, is to give readers an overview of the structure of solvency requirements and the need for capital that may be used across the world. While there need to be references to aspects such as liabilities and assets, because they form an essential part of any solvency regime, these are covered in detail in other modules.

Learning objectives

When you complete this module, you should be able to:

- 1 Describe the basic elements of a solvency regime
- 2 Describe what is meant by the terms "capital adequacy" and "solvency" and explain the difference
- 3 Explain the differences between going concern, run-off, and break-up concepts of solvency
- 4 Explain each of the following reasons for which insurers need capital:
 - a) Financing start-up
 - b) Financing growth and diversification
 - c) Liquidity
 - d) Precaution against fluctuation of asset and liability values
 - e) Precaution against adverse experience
 - f) Public confidence, and
 - g) Statutory purposes.
- 5 Describe the sources of capital for an insurer
- 6 Summarise steps commonly taken by supervisors to guard against insolvency of supervised insurers
- 7 Describe the essential elements of a solvency regime
- 8 Explain the difficulties in measuring capital
- 9 Describe the criteria used to assess the suitability of potential forms of capital
- 10 Explain which risks of insurers are more amenable to being mitigated with capital and which are not



- 11 Compare the following types of capital requirements:
 - a) Fixed minimum standards
 - b) Standards proportional to size, and
 - c) Risk-based standards.
- 12 Explain the purpose of solvency control levels
- 13 Explain why a solvency regime may place different requirements on an insurer operating through a branch and describe some commonly used requirements
- 14 Describe steps that may be taken to prevent the inflation of capital through double or multiple gearing, intragroup transactions, or other financing techniques available as a result of an insurer's membership in a corporate group
- 15 Explain the linkages between the ICPs on Solvency and the other ICPs that relate to prudential requirements.



1 Introduction

Insurers, in exchange for the receipt of premiums from their policyholders, take on obligations to pay benefits in the future according to policy requirement.

Whether insures meet these obligations satisfactorily depends on many things. A core issue is for insurers to have adequate financial resources stay in business and to pay benefits when they come due. The topics of solvency and capital adequacy focus on this. These topics are closely related, but not the same. The focus of this module is on solvency. Policyholders have expectations, so the fairness of how insurers and their intermediaries conduct their business are also important. Other modules address other issues such as market conduct.

1.1 What is solvency?

The word solvency can have many meanings. Therefore, it is important to clarify how it is used in this module and more widely by supervisors.

Commonly, solvency can be taken to mean that, at a specific point in time, a provider of services has more assets than liabilities and so has the capacity to pay all its debts thus meeting all its obligations. At a minimum, this is 'cash flow' solvency, meaning that today's obligations can be paid for. This is simplistic and hides may issues and nuances that should be made explicit. Indeed, it is clearly inappropriate for a long-term insurer. Ponzi schemes are cash flow solvent until the point they collapse. Slightly stronger, having assets exceed liabilities may give some confidence, but does not consider liquidity, quality of assets, or future positions.

Usually, business models flow in the direction of making product first and then selling it. Insurance works in the opposite direction, take in premiums from selling a future promise and then sometime in the future delivering the product of the promised benefits. This implies that there is a strong interest, for both policyholders and supervisors, in the insurer being in business at some point(s) in the future. This future focus become increasingly important as the expected time policies will remain in force increases.

The core challenge is therefore to assess the likelihood of an insurer that is in business 'now' still being in business in the future. This is a challenge for both supervisors and insurers. They, and other stakeholders, may take different approaches for making their assessment and so come to differing conclusions. This module focuses on the supervisor's perspective, no those of other stakeholders. This also highlight the need, when discussing 'solvency' to be clear on the context and purpose of the discussion.

The core solvency question to address, therefore, is "How can a supervisor gain adequate comfort that an insurer will remain in business in the future?".



1.1.1 Time horizon

This highlights the need to specify a time horizon so that the 'future' is more clearly defined.

An insurer's obligations at a given point in time, to existing policyholders and claimants, generally will be influenced by future events. Therefore, the obligations can only be estimated. It is impossible to guarantee and insurer that currently appears able to meet its obligations will still be able to do so many in the future. At the other extreme, if an insurer appears able to meet its obligations today but is subject to a high risk that it may be unable to do so tomorrow, then it could not usefully be considered solvent.

A practical compromise employed by many supervisors and solvency regimes, is to use a oneyear time horizon. This may also include a requirement to project of business plans for longer period (say 3 years) and a demonstration that capital adequacy is expected to be maintained throughout the projection period. This compromise considers an insurer solvent only if it seems very likely that it will continue to be solvent one year hence.

1.1.2 Uncertainty

The nature of insurance business makes it is impossible to guarantee solvency with certainty. No matter how financially strong an insurer might be, there may be an economic scenario, natural disaster, or human-made catastrophic event that will lead to insolvency.

A key component of solvency of an insurer is its financial strength. In particular, financial weakness is a threat to solvency. As noted later, there are also other important aspects to solvency.

One assessment of uncertainty with regard to solvency is the focus on the financial strength of the insurer. Having specified a time period to work with, a supervisor can then specify a measure confidence to be met for the insurer to be considered financially solvent.

A common, but not the only, approach is to require a high level of confidence that the insurer is not expected to breach the financial solvency requirement in the specified time period. For example, the Solvency II requirement is that there is 99.5 % confidence level over a 1-year time period.

However, the question of how much certainty is necessary or appropriate is a matter of judgment. The process of making such assessment can be complex and challenging. Supervisory judgment may also be required in making assessments once the criteria have been specified.



1.1.3 Purpose

Insurer may experience varying circumstances and so solvency assessment may have varying purposes.

• **Going concern.** Insurers usually seek to operate as going concerns, meaning they are open to new business. Usually without specific supervisory restriction, but with supervisory awareness through appropriate reporting.

For an insurer to be considered financially solvent on a going-concern basis, it should have adequate financial resources to meet obligations both to existing policyholders and to those who will become policyholders in the future. It is important to note the future orientations of this due to the inclusion of future policyholders. Clearly maintaining going-concern solvency is desirable for all stakeholders.

• **Inforce.** Financial solvency could focus strictly on an insurer's ability to meet its obligations to existing policyholders. That is, no consideration is given to future policyholders. This may be relevant if the insurer ceased writing new business, either voluntarily or at the direction of the supervisor. It may also be the case if legislatively required. In this case, solvency would be considered assuming the insurer remained in operation, collecting premiums and paying benefits, until all existing policies had expired or matured and obligations under those policies had been settled.

For some lines of business, such as life insurance, the run-off of business could take many years.

- **Break-up or winding-up**. In these circumstances, the insurer not only would stop writing new business but also its existing obligations would either be settled or transferred to another insurer as soon as possible. A supervisor's interest in break-up or wind-up solvency will likely be greater than that of an insurer's shareholders, board of directors, and senior management, who typically are more oriented toward a going concern perspective. In these cases, supervisors' obligations toward policyholder protection become important.
- **Merger.** A special case of a breakup situation is when two insurers merger. Either one insurer into the other or both into a third entity. In these circumstances, there is a desire to transfer business as quickly as possible. There is also a risk that the insurers' shareholders, boards of directors and senior management may be distracted from policyholder considerations. In these cases, supervisors' obligations toward policyholder protection become important.



In each of these cases, the purpose of solvency assessments may be different as there are different circumstances and expectations involved.

1.1.4 A definition

We now pull the above discussion together.

- **Solvency** is the ability of an insurer to fully meet its obligations (liabilities) to policyholders as they fall due (in the future).
- **Supervisory solvency** is achieved, at a point in time, if the supervisor has sufficient confidence that an insurer will continuously remain viable, for the purpose of the solvency assessment, for specified length of time into the future.

This requires that the **level of confidence**, the **time horizons** and the **purpose** of the solvency assessment must be defined.

- An assessment of supervisory solvency needs to address many aspects of the insurer and its business.
 - Capital adequacy. Are adequate financial resources held? This is as assessed by determining if the insurer is capital adequate that is, continuously expected to meet supervisory capital requirements. This includes, amongst other things, assessment of an insurer's technical provisions.
 - **Liquidity.** Is there adequate liquidity to fully meet its obligations in timely and appropriate way?
 - **Corporate governance.** Are the qualitative requirements of good corporate governance in place? This includes matters such as corporate culture and incentives.
 - **Risk management.** Are the qualitative and quantitative requirements for effective enterprise risk management in place? This includes having the appropriate compliance and control functions in place.
 - Other requirements as specified by the supervisor or in legislation.

When an insurer fails to meet one or more of the supervisor's solvency assessment requirements, it becomes insolvent from the perspective of the supervisor.

We emphasise that this may not mean that the common meaning of solvency (cash flow solvent) is breached. Rather, it means that, over a specified time period, and for specified purpose, the supervisor does not have sufficient confidence the insurer will be able to continuously meet all its obligations in a full and timely way. We acknowledge that over time this may still lead to loss of value and unmet expectations of policyholders (and perhaps other stakeholders)



As a shorthand, the following definition of (supervisory) solvency can be used:

Solvency is the ability of an insurer to meet its obligations (liabilities) to policyholders as they fall due. Solvency includes capital adequacy but also involves other aspects of a solvency regime, for example, technical provisions, qualitative aspects (such as would be addressed in an enterprise risk management framework), supervisory review and reporting.

The reader should be careful to retain a clear awareness of the point discussed above but not explicitly mentioned.

Supervisors monitor the solvency of insurers so they can get early warning of risks to (supervisory) solvency and then take appropriate actions. As the risk of breaching a solvency requirement increases, the challenges the supervisor faces may increase. A key indicator of increasing risk is financial weakness. However, other indicators, perhaps less quantifiable, are also important to support a supervisor forming a balanced view. It is not uncommon for insurers that become (supervisorily) insolvent to still meet capital adequacy requirements when they become insolvent.

Initial actions are likely to be remedial, with the insurer continuing in business and (hopefully) recovering. Actions that are more serious may be needed if the insurer cannot continue in business and needs to be wound up and resolution activities are required. Other modules and ICPs address these matters.

It is implicitly assumed above that the supervisor has the capacity to effectively conduct supervisory reviews and assessments. How supervisory reporting and assessments, for solvency and other matters, should be conducted is discussed in other modules and ICPs.

Although not specifically discussed, we note that if an insurer is part of a group, then the solvency of the group is a different matter to the solvency of each of the individual components of the group. These issues are addressed in other modules and ICPs. This module focuses primarily on a single insurer.

1.2 Solvency is challenging

Solvency not only is difficult to define but also can be difficult to maintain. Often, the solvency difficulties could be traced back to internal causes such as problems with management, shareholders, or other external controllers of the insurers. The problems may include incompetence, operating outside areas of expertise, lack of integrity or conflicting objectives, or weakness in the face of inappropriate group decisions. These internal weaknesses can lead to inadequate decision-making processes, internal controls, and risk decisions that, in turn, leave the insurers vulnerable to external "trigger events." Case study 1 provides examples of problems encountered by insurers in this regard. Clearly, good governance and risk management are essential to the maintenance of solvency.


However, the vulnerability of insurers to financial difficulties can be reduced by ensuring that asset cash flows are available to meet liabilities when they come due, for example, through asset–liability management (ALM) and liquidity management; and by maintaining a safety margin of assets over liabilities. Such a safety margin is provided by an insurer's capital.

1.3 The supervisors role

A fundamental objective of insurance supervision is protecting the interests of current and prospective policyholders. If they are to be protected, insurers must be able to make good on their promises. Those that become insolvent quite likely will be unable to meet their obligations in full and on time. Accordingly, solvency typically is a major focus of insurance legislation, regulation, and supervision.

1.4 The need for capital

What is capital? The IAIS Glossary defines capital as the financial resources of an insurer.

Capital serves as a cushion against adverse experience and financial fluctuations, helping an insurer to maintain solvency while it deals with the many risks to which it is subject. The manner in which capital adequacy requirements can recognise these risks, which may be categorised as underwriting, credit, market, operational, and liquidity risk), is discussed in section 3. Many of these risks arise from the risk-taking and financial intermediation aspects of the insurance business itself.

However, capital is also essential in enabling insurers to meet the types of strategic and operational needs that it shares with any business. A new insurer needs cash, sometimes referred to as working capital, to finance its start-up expenses. Established insurers need capital to finance the expenses of, and provide a buffer against the risks posed by, diversification into new products, market segments, or geographic territories. As a company's business grows, the amount of capital needed to provide an adequate safety margin also will grow, although perhaps less than proportionally, if the company is successful in diversifying its risks. At the same time, however, the costs of acquiring new business, particularly in the case of life insurance, may depress an insurer's profits or even create losses, when the business is taken on (this may be despite the business being expected to make profits over the lifetime of the policies). In addition, the nature of long-term life insurance contracts with relatively high initial expenses can imply that it may take a number of years before a new company starts reporting overall profits.

In light of the fiduciary nature of the insurance business, a strong capital position can increase the confidence of current or prospective policyholders that an insurer will be able to meet its obligations to them. In fact, some insurance consumers, for example, large corporations or insurers seeking reinsurance, may refuse to do business with insurers that lack enough capital



to qualify for a high rating from a rating agency. Viewed from a broader perspective, an insurance sector comprised of well-capitalised companies contributes to public confidence and the effective functioning of the insurance market.

Thus, the existence of capital may provide a number of benefits beyond keeping an insurer financially solvent. Determining how much capital will be adequate to respond to these various needs can be a complicated process, and, to some extent, a judgment call. The topic will be further explored in section 3.

1.5 Sources of capital

Adequate capital, however it may be defined and determined, is essential to an insurer.

There are a number of possible sources of capital for an insurer, the relevance of each to a particular insurer will depend on such factors as its corporate legal form, who owns it, its stage of development, and its financial position and performance.

Many insurers are constituted as shareholder-owned corporations. The initial capital for such an insurer is obtained by issuing and selling common shares (stock), which provide their purchasers with shares in the ownership of the insurer. Shareholders make this investment in the expectation that the insurer will be successful, that is, profitable and growing. Shareholders may then benefit through the distribution of a portion of these profits to them as dividends, through their ability to sell their shares at a higher price, or both. A shareholder-owned corporation may be either widely held, that is having many shareholders, or closely held with few shareholders. For example, the shares of an insurer that is part of a financial conglomerate may be wholly owned by its corporate parent.

Some insurers, for example, mutuals, friendly societies, and cooperatives, have no shareholders but are owned by some or all of their policyholders. The initial capital for such insurers is obtained from a founding group of policyholders. While their initial capital contributions will be returned to them once the insurer becomes well established, their claim against the insurer is not a transferable right of ownership that can be sold to a third party, such as that of a shareholder in a shareholder-owned insurer.

Finally, some insurers may be state-owned. In such cases, their initial capital is obtained from the government.

Once an insurer is through its start-up period, its primary source of capital typically will be retained earnings. Retained earnings are the profits that have been earned by the insurer but have not been distributed to policyholders or shareholders. Both shareholder-owned and policyholder-owned insurers may, depending on their licensing requirements, issue participating or with-profits policies, which provide for sharing the insurer's profits with the policyholders. In the case of policyholder-owned insurers, such policies also confer rights of



ownership, such as the right to elect directors to the board. As mentioned above, shareholders expect to share in the insurer's profits, and the board of a profitable shareholder-owned insurer would typically declare dividends payable to shareholders. However, the board of directors of any type of insurer will usually decide to retain a portion of its profits to expand its capital base.

If an insurer is growing rapidly or has adverse experience, it may need more capital than can be generated, at least in the short term, by profits on its existing policies. Shareholder-owned insurers may be able to raise additional capital by selling more shares to either existing shareholders or new investors. If the insurer is closely held, it most often will look to existing shareholders for additional capital. Additionally, as discussed in section 2, some of the capital raised may be in forms other than common shares, for example, preference shares. In any case, the willingness of investors to provide capital and the terms on which they are prepared to do so will depend on their assessment of the insurer's future prospects.

Policyholder-owned (often referred to as mutual) insurers are at a distinct disadvantage when it comes to raising capital, as they are unable to sell shares to investors. To overcome this constraint on their ability to grow and compete effectively, many mutual insurers have in recent years converted to shareholder-owned insurers, that is demutualised. In a demutualisation, participating policyholders receive shares or cash in exchange for the company ownership rights inherent in their policies. Subsequently, the demutualised insurer can raise capital in the same manner as any other shareholder-owned insurer.

Another technique used by insurers to cope with a shortfall in capital is to reinsure some of their business. Some of the risk is assumed by the reinsurer, thereby reducing the amount of capital needed by the insurer as a safety margin. Reinsurance arrangements might also be structured to provide for the upfront payment by the reinsurer of some of the expected future profits of the business reinsured (financial reinsurance), thereby providing the insurer with immediate additional capital.

An insurer might also decide to borrow money to help meet its needs, for example, by obtaining a loan or by issuing bonds. However, since borrowed money must be repaid together with interest, supervisors normally do not treat it as an eligible capital element. Section 2 includes a discussion of the criteria that might be applied to determine the suitability of different forms of capital.

1.6 Terms used

Many of the insurance related terms used in this module are defined in the IAIS Glossary of Terms (see <u>www.iaisweb.org</u>). When additional terms are used, they are defined in the text.

The terms regulation and supervision are often used interchangeably, but they mean different things. In this module, regulators establish "the rules of the game," such as regulations and



guidelines related to an Insurance Act (or Acts). Supervisors are the "referees" whose role is to oversee that these rules are complied with and deal with the consequences of non-compliance. This requires supervisors to apply judgment when making determinations and decisions. Understanding the difference between the regulation and supervision is important when allocating of responsibilities between regulators and supervisors, especially when they are different agencies.

In this module "supervisor" is used to include both regulators and supervisors. The module also assumes that supervisors are insurance supervisors. Supervisors, as determined by the context of the particular use, may be either the individuals working for a supervisory agency or authority or the authority itself.

While the terms used in this module are suitable for the purposes of this module, it may be that in specific real situations, more detailed definitions or explanations are necessary. These more detailed definitions may also vary between jurisdictions.

Some terms may not have unique meanings, and definitions contained in various sources may differ. To avoid ambiguity and reduce the risk of misuse and misinterpretation, readers should take care to be comfortable they are clear on the definitions of the terms used.

Exercises – Section 1

Answer the following questions considering, where indicated, the practices in your jurisdiction. If you are working with others on this module, develop the answers through discussion and cooperative work methods.

- Ex 1 How might the interests of an insurer's board and senior management in solvency coincide with those of the supervisor? How might they differ?
- Ex 2 Consider the most recent instances of insurers in your jurisdiction raising additional capital. Why did they do so? What were its sources?
- Ex 3 There is a trend toward broadening solvency regimes to include elements such as risk management and disclosure requirements. Comment on the presence and relative effectiveness of quantitative and qualitative elements in your jurisdiction's solvency regime.



2 Elements of a solvency regime

2.1 Overview

ICPs are principles based and prescribe the essential elements that must be present in a supervisory regime. The objective is to promote a financially sound insurance sector and provide an adequate level of policyholder protection. The next level after ICPs are standards that are linked to specific ICPs and set out high level requirements that are fundamental to the implementation of the ICPs.

Essential elements of a solvency regime include:

- Valuation of liabilities, including technical provisions and the margins contained therein
- Quality, liquidity and valuation of assets
- Matching of assets and liabilities
- Suitable forms of capital
- Capital adequacy requirements. and
- Group supervision

In section 2, each of these elements will be examined in turn, with the exception of capital adequacy requirements (see section 3). Before doing so, it is important to note that while these largely quantitative elements are necessary, their existence alone will not necessarily ensure solvency.

The board of directors and senior management of an insurer are responsible for its prudent operation and, therefore, must take primary responsibility for ensuring its solvency. They need to recognise the range of risks that the insurer faces and manage them effectively. Both the insurers and their supervisors need to understand that not all risks can be mitigated solely with capital. For example, capital can provide an effective safety margin against adverse claims experience on a portfolio of insurance policies that has been prudently designed, adequately priced, carefully underwritten, and appropriately protected by reinsurance. However, weaknesses in any one of these areas might make it impossible, or at the very least economically unfeasible, to maintain enough capital to provide an effective safety margin. Taken to an extreme, consider how much capital might be needed to secure the solvency of a small insurer that operates in a coastal region prone to hurricanes, writes only property insurance on large risks, applies limited underwriting, and has purchased no reinsurance coverage.

There is a need for various stakeholders of an insurer, such as investors, creditors, policyholders, and intermediaries to have access to information on the risks it has undertaken



and its financial capacity to bear these risks. Such disclosure by insurers enables markets to act efficiently, and the discipline it engenders serves as an adjunct to supervision.

Supervisors and others have responded to these issues by recognising that capital adequacy and other quantitative requirements should be integrated into broader solvency regimes. For example, EU Solvency II, various IAA publications, and the Basel II Capital Accord for banks each identify quantitative capital adequacy requirements, supervisory assessment of risk management, and disclosure of information as key elements, or pillars, of a broader solvency regime. The relative emphasis on each of these elements may vary by jurisdiction, reflecting differences in such things as supervisory philosophy, market development, and technical capabilities of the insurers. For example, supervisory assessment of risk management might be emphasised in a jurisdiction in which relatively little statistical information exists to support the development of risk weights for a capital adequacy test and few of the insurers are widely held, that is, accustomed to providing extensive public disclosures.

2.2 Liabilities and assets

Solvency is fundamentally an assessment of an insurer's current and, perhaps, prospective, balance sheet. Therefore, it is impossible to make an adequate assessment of solvency unless the liabilities and assets in the balance sheet are valued appropriately. While opinions may differ on what is "appropriate," a coherent solvency regime cannot exist in the absence of reliable and reasonably consistent bases of asset and liability valuation. It is worth noting that many exposures may exist that do not show up on the balance sheet such as high limit policies, large catastrophe exposures, or other concentrations of risk from future events.

To the extent possible, the valuation bases should provide a clear picture of insurers' financial situations, reflecting their economic viability. Distortions should be avoided, as should volatility that is unrelated to the true economics of the business. For example, if assets are valued at historical cost but liabilities are valued based on current market conditions, an insurer's financial results could well be both volatile and distorted. The valuation bases should not only produce results that are comparable from one period to the next for any particular insurer but also facilitate comparisons of one insurer to another.

Supervisors have responded to these measurement challenges in various ways. In some jurisdictions, accounting and actuarial standards provide the bases for the valuations used for both shareholder and supervisory reporting purposes. In other jurisdictions, insurance supervisors specify the valuation bases to be used for reporting to the supervisor, which may differ from that used for shareholder reporting. Still others take intermediate approaches, such as requiring specific adjustments to the valuation bases used for shareholder reporting. Regardless of the approach taken, it is essential that the solvency regime be sensitive to the valuation and accounting requirements that apply to the insurers.



2.2.1 Technical provisions

Technical provisions are the liabilities on an insurer's balance sheet due to its obligations arising out of insurance contracts. Since technical provisions typically account for the vast majority of an insurer's liabilities, it is essential that these provisions adequately reflect these obligations. The ICPs require supervisors to establish procedures for assessing the valuation of assets, non-policyholder liabilities and technical provisions. Insurers should comply with these standards for establishing technical provisions, assessing their adequacy, and increasing them if necessary. Supervisors usually also have the power to require insurer's to increase any and all of the items listed here if they deem it necessary.

Technical provisions, particularly those of life insurers, are often calculated by actuaries. The techniques for doing so are varied and sometimes complex. Regardless of the techniques employed, to the extent possible, technical provisions should reflect all of the risks related to the policies written by the insurer. They should be sufficient to cover not only claims and other policy benefits but also any related administration expenses, taxes, embedded options, and policyholder dividends or bonuses, as well as required margins.

Since the technical provisions are only estimates of an insurer's ultimate obligations under its policies, whether or not these estimates are adequate can only be known in retrospect, once the obligations have been settled. However, the ICPs give some guidance, saying that technical provisions plus supervisory capital requirements should be sufficient to ensure that policy obligations are satisfied with the probability of sufficiency required by the supervisor. This means that some margin for adverse experience should be included in the technical provisions.

Unsurprisingly, the supervisors, actuaries, and accountants in various jurisdictions have different ideas about how much margin there should be and how it should be calculated. For example, in some jurisdictions, technical provisions are calculated using assumptions that are best estimates plus explicit margins for adverse deviation in each assumption; the actuarial profession provides guidance on the size of these margins. In other jurisdictions, supervisors may limit or specify values for particular assumptions, which, although sometimes intended to be quite conservative, generally do not facilitate identification of the amount of the margin. Finally, some jurisdictions, have begun to explicitly state that the level of the margin should be to provide a particular level of confidence that the technical provisions will be adequate, as determined through stochastic modelling of multiple scenarios. It is important that the method being used should be appropriate to the complexity of the markets and environment in the relevant each jurisdiction.

It is important that capital adequacy requirements be sensitive to the level of margin in the technical provisions and how it may, or may not, change in response to changes in economic conditions and other factors. All else being equal, the supervisor in a jurisdiction in which the technical provisions include explicit margins that vary in accordance with changing conditions



may require its insurers to maintain less capital than the supervisor in a jurisdiction that specifies particular assumptions, whose initial conservatism may erode as conditions change.

2.2.2 Other liabilities

An insurer, like any other business, will have liabilities apart from its obligations under insurance contracts. These liabilities may include amounts borrowed from banks, equipment leases, accrued wages of its employees, pension obligations to both retired and currently active employees, taxes payable, accrued interest, and contingent obligations under derivative contracts. Typically, insurers will account for such liabilities in the same manner as other businesses in their jurisdiction.

Supervisors need to understand how such liabilities are being accounted for by insurers and ensure that the provisions established are adequate. Furthermore, when designing and enforcing a solvency regime, it is essential that supervisors understand the relative legal priority of liabilities to policyholders and those to other parties in the case of insolvency. In recognition of the fiduciary nature of the insurance business, insurance laws in many jurisdictions rank obligations to policyholders above some, but not necessarily all, other liabilities of an insolvent insurer. Furthermore, many jurisdictions also enforce separate policyholder and shareholder funds that can improve security for policyholders, especially for investments and savings of policyholders.

2.2.3 Assets

It is important that assets be realisable to meet obligations to policyholders at any time. Therefore, solvency regimes must address the quality, liquidity, and valuation of assets.

A diversified portfolio of high-quality assets is more likely to maintain its value than one whose assets are speculative in nature. Accordingly, solvency regimes typically include restrictions on the types and mix of assets in which insurers may invest. As discussed in section 3, risk-based capital adequacy requirements also provide an incentive to invest in high quality assets by requiring insurers to hold less capital as a margin against potential losses on such assets than on lower quality assets. Since the amount and timing of obligations to policyholders are seldom certain and, in fact, may fluctuate significantly, insurers need to maintain enough cash or liquid assets to meet these obligations on short notice. Liquid assets are those that can be quickly converted to cash in an amount equal or very close to their value on the insurer's books. In normal circumstances, cash flows from premium payments and interest on invested assets often are sufficient to enable an insurer to meet its obligations, without the need to realise any assets. However, insufficient liquidity to cope with abnormal circumstances can lead an insurer to solvency difficulties. See case study 1 for an example.



Appropriate valuation of assets is also essential to the determination of an insurer's solvency. Investments must be valued according to a method prescribed by or acceptable to the supervisor. Valuation methods should be prudent, transparent, objective as possible, and produce consistent results. Some assets can easily be valued, for example, cash, government bonds, and shares that are regularly traded on an established exchange. The valuation of other assets may be more complex or subjective, for example, real estate, which may require periodic assessment by experts; and "over the counter" derivatives, which may require the use of models.

To provide greater assurance that the asset values in insurers' balance sheets are prudent, some solvency regimes incorporate mechanisms for deferring recognition of increases in the values of certain assets. For example, increases in the market values of investments in common shares might not be reflected in the balance sheet until the shares are sold, or only a portion of the previously unrecognised increases might be recognised each year. On the other hand, assets that have declined in value, perhaps due to the financial troubles of their issuers, might have to be held at their reduced market values, which are all that could be realised if the insurer were to become insolvent.

The values of some types of assets may diminish, or even vanish, in situations of stress or insolvency. For example, an insurer that has had some unprofitable years may be entitled to apply its losses against future years' profits, thereby reducing or eliminating the taxes payable on those profits. The insurer may carry an asset on its balance sheet in respect of this entitlement. However, if the insurer becomes insolvent, there is no prospect of future profits or tax savings, thereby rendering this asset worthless unless, perhaps, the insolvent insurer can be merged with a profitable one. Other assets that might be of limited value in meeting policyholder obligations in the event of insolvency include the furniture and equipment used by an insurer in its operations, amounts due from insurance intermediaries, and investments in subsidiaries or affiliated companies. Not only are these assets illiquid, but also enforcing the repayment of such amounts in an insolvency situation would likely be very difficult, if not impossible.

Solvency regimes respond to this risk in various ways. One approach is to disallow certain assets entirely, either on the balance sheet that insurers submit to the supervisor or for purposes of the capital adequacy test. In this case such assets are often called non-admitted or inadmissable. Another approach is to limit the recognition of such assets, for example, by ignoring the portion of their value in excess of a defined percentage of the insurer's assets or by recognising only a certain percentage of their value, sometimes known as "haircutting". Yet another technique is to apply a high-risk weight to such assets when calculating required capital under a risk-based capital adequacy test.



2.3 Case study 1. Liquidity crisis

In 1999, an American insurer's credit rating was downgraded by a major rating agency. Shortly thereafter, many investors invoked the seven-day redemption clause in the short-term funding agreements issued by the insurer. Although these agreements suddenly behaved like short-term liabilities, the supporting assets were invested for longer terms.

The insurer was unable to sell assets quickly enough to meet the redemption requests. The combination of a mismatch in the terms of the liabilities and assets and the rating downgrade led to a liquidity crisis, causing the insurer to voluntarily seek state insurance department supervision.

2.3.1 Asset–liability management

As case study 1 demonstrates, a mismatch between the term of an insurer's liabilities and that of its assets can create liquidity problems that are serious enough to threaten its solvency. However, the need for an insurer to align its assets with its liabilities is important for more reasons than just ensuring adequate liquidity. An insurer's results can be subject to adverse fluctuations or trends, perhaps threatening its solvency, if its assets and liabilities are mismatched in terms of currency or the timing or amount of the cash flows. The risks may be particularly high in the case of long-term life insurance, annuity, or savings products that provide various guarantees or embedded options.

Solvency regimes need to address the matching of assets and liabilities. One way to do this is to require that insurers develop and implement programs of asset–liability management (ALM). ALM is the practice of managing a business so that decisions and actions taken with respect to assets and liabilities are coordinated. This is done through an ongoing process of formulating, implementing, monitoring and revising strategies related to assets and liabilities to achieve an organisation's financial objectives, given the organisation's risk tolerances and other constraints. ALM is relevant to, and critical for, the sound management of the finances of any organisation that invests to meet its future cash flow needs and capital requirements.

A wide range of techniques can be used in an ALM program, for example, stochastic modelling of asset and liability cash flows, Value at Risk (VaR) calculations, and hedging with derivatives. A more substantive discussion of ALM is beyond the scope of this module.

The mitigating influence of a well-executed program of ALM might be explicitly recognised in a solvency regime. For example, a supervisor may require life insurers to hold an amount of capital in respect of the assets backing index-linked products in inverse relation to the correlation between the rates of return credited to policyholders' funds and the returns earned on the underlying assets. For example, if the returns are shown to be perfectly correlated, this component of required capital may be nil. If the returns are only 85 percent correlated, required capital may be 15 percent of assets.



2.3.2 Reinsurance

Any allowance for risk mitigation or transfer should consider both its effectiveness and the security of any counterparty. Reinsurance is one of the techniques most commonly used by insurers to mitigate or transfer some of the risk that they have assumed. Its use has a number of implications that must be addressed by a solvency regime.

It is important to note that the purchase of reinsurance protection does not extinguish or diminish an insurer's ultimate obligations to its policyholders. Insurers enter into reinsurance arrangements with the expectation that their reinsurers will make good on their own obligations when they come due. While this expectation usually manifests, it is not a certainty. For example, a reinsurer may become insolvent or an insurer may have entered into an agreement with a disreputable reinsurer that refuses to pay claims promptly or in full. In the case of such a default, the insurer must nevertheless meet its obligations to policyholders out of its own resources.

For this reason, solvency regimes seek to limit this reinsurance counterparty credit risk in various ways. One way is to encourage insurers to deal with reputable, financially strong reinsurers. Insurers should be expected to perform due diligence on prospective reinsurers before entering into agreements with them. Some jurisdictions license and supervise reinsurers and may not allow insurers to deal with unlicensed reinsurers or, if such dealings are allowed, to take credit on their balance sheet for amounts due from unlicensed reinsurers. Others may apply "haircuts" to the credits that may be taken for amounts due from reinsurers that have lower ratings from ratings agencies, or allow credits only if the reinsurer posts collateral in a trust. Some jurisdictions establish limits to prevent excessive concentration of an insurer's reinsurance program with a single reinsurer.

Credits for reinsurance on an insurer's balance sheet may take the form of assets, for example, amounts receivable from reinsurers; or of reductions in liabilities, for example, lowering the technical provisions in proportion to the amount of coverage purchased. The precise treatment will depend on the accounting standards applied in the jurisdiction, perhaps supplemented by supervisory requirements.

The above discussion of taking credit for reinsurance on the balance sheet is premised on the assumption that there has actually been a meaningful transfer of risk from the insurer to the reinsurer. This assumption may not always be valid. Some reinsurance arrangements, for example, financial reinsurance, are designed primarily to assist insurers in meeting prudential requirements with little or no transfer of risk. Solvency regimes may include criteria for assessing the effectiveness of the risk transfer and provide no balance sheet credit unless the criteria have been met. Supervisors may need to review not only the financial records of a reinsurance arrangement but also the reinsurance contract itself—along with any "side letters" that may exist—to make such an assessment.



2.4 Capital

Finally, before turning to a discussion of how much capital might be required, it will be useful to consider what forms of capital might be suitable to meet such requirements and how the amount of capital available might be measured.

From a simple accounting perspective, the amount of capital available might be calculated by taking the arithmetic difference between an insurer's assets and its liabilities. This measurement will obviously be affected by the ways these elements of the balance sheet have been valued. As noted above, the valuation bases vary from jurisdiction to jurisdiction, reflecting differences in accounting and actuarial standards and supervisory requirements. For example, in one jurisdiction, assets may be valued using current market values, while in another jurisdiction they are valued at historical cost. In either case, there may or may not be a mechanism for smoothing the changes in reported values. To the extent that the reported values of assets or liabilities differ from best estimate or fair market values, "hidden reserves" are created; such reserves may be positive or negative.

Within a particular jurisdiction, the valuation bases may also vary from insurer to insurer, although hopefully not too much, reflecting the choices each insurer has made within the confines of the local regime. One insurer may follow an aggressive accounting approach to show more favourable financial results by, for example, minimising the margins in its technical provisions and seeking optimistic appraisals of its real estate investments. Another insurer may elect to include extra margins in its technical provisions and use conservative appraisers in valuing its real estate.

The foregoing highlights the need for supervisors to be fully aware of the valuation and accounting practices being applied by insurers when examining their reported capital. Such awareness may be especially challenging when the examination involves the financial reporting done in the context of another jurisdiction's requirements. However, simple balance sheet comparisons can easily lead to inappropriate conclusions.

Another way to look at capital is to consider the sources of an insurer's assets and the nature of any claims against those assets. Predominantly, insurers' assets come from the premiums paid by policyholders and the returns earned through the investment of those premiums prior to the payment of policy benefits. Likewise, the claims against insurers' assets consist primarily of its obligations to policyholders. However, as mentioned in section 1, some assets come from sources other than policyholders, for example, the sale of shares. Other assets may arise from policyholders, but exceed the remaining obligation to them, that is, retained earnings. From this perspective, capital can be viewed as the claims against an insurer's net assets, roughly, assets minus technical provisions and other liabilities. Capital instruments define the nature of those claims.



The capital shown on an insurer's balance sheet may represent either equity claims or debt claims. Equity claims are defined by instruments such as shares of stock, contribution certificates in respect of the initial capital of a mutual insurer, and participating policies. Debt claims are defined by instruments such as bonds or commercial paper. The precise nature of the claims evidenced by these instruments must be evaluated in determining whether the corresponding amounts of reported capital are of suitable quality to be recognised in the context of a solvency regime.

Solvency regimes should either clearly define the forms of capital that will be recognised as suitable or set out criteria that can be used to assess the suitability of particular capital instruments.

Solvency regimes deal with any differences in the potential capital elements' availability to cover unexpected losses and their permanence in various manners. Some jurisdictions define one or more categories, or tiers, of capital quality. For example, tier 1 would consist of the highest quality capital, such as common shares, retained earnings and perpetual non-cumulative preferred shares. Tier 2 capital, which falls short in meeting one or both of the quality criteria but still contributes to the overall financial strength of an insurer, might include goodwill and intangible assets, future income tax credits, and hidden reserves. Whether or not a tiered approach is employed, supervisors will generally specify additions or reductions to reported capital for purposes of assessing capital adequacy, for example, non-admitted assets, reinsurance with unregistered reinsurers, and market value smoothing reserves.

Exercises – Section 2.3

Answer the following questions considering, where indicated, the practices in your jurisdiction. If you are working with others on this module, develop the answers through discussion and cooperative work methods.

- Ex 4 In your jurisdiction, who establishes standards for the valuation of the assets and liabilities of insurers that are reported in the financial statements prepared for their shareholders? Are these same values used in the supervisory returns? If not, how do they differ?
- Ex 5 Technical provisions may be calculated using assumptions that are intended to be conservative, which method provides implicit margins. Alternatively, they may be calculated using "best estimate" assumptions to which explicit margins are added. What are the advantages and disadvantages of each in the context of establishing solvency requirements? Which approach to calculating technical provisions is used in your jurisdiction?



- Ex 6 What are some of the ALM techniques used by insurers in your jurisdiction? How does your solvency regime recognise the presence or absence of ALM?
- Ex 7 Solvency regimes sometimes seek to limit reinsurance counterparty risk by allowing insurers to take credit on their balance sheets only for reinsurance with highly rated reinsurers. However, if few highly rated reinsurers are operating in a jurisdiction, insurers that want to obtain credit may be subject to concentration risk. How might a solvency regime address this dilemma? What approach is used in your jurisdiction?
- Ex 8 What forms of capital are recognised for supervisory purposes in your jurisdiction? How does supervisory capital in your jurisdiction differ from the result of simply subtracting an insurer's liabilities from its assets?
- Ex 9 The highest quality capital is both presently available and permanent. To what extent would you consider each of the elements of capital recognised for supervisory purposes in your jurisdiction to be presently available? To what extent is each permanent?



3 Capital adequacy

Capital adequacy is a concept that considers the interaction of the available resources and compares them to the potential for an adverse outcome that may erode these resources. To the extent that an insurer has sufficient resources to withstand a particular adverse event, it would be "capitalised adequately" if that event happens. The difficulty, however, is that there are many potential adverse events, and they have different likelihoods of occurring and different magnitudes of effects when they do occur. Furthermore, more than one adverse event may occur at the same time; they may be linked in cause and effect creating a correlation effect; or they may magnify or reduce the size of the resources required to withstand them if they occur together rather than separately.

The ICPs indicate that an insurer should be able to recognise, measure, manage, and mitigate the risks that it faces. Capital is one way of providing resources against such risks and is, therefore, a form of risk mitigation. Other forms of risk mitigation include reinsurance and underwriting controls. The regulation of capital has two basic objectives. The first is to provide a minimum level of resources considered prudent for supervisory purposes. This requirement can provide an element of capital over and above that considered necessary by the company itself to meet its business needs. The second is to provide a trigger for intervention.

The IAIS has established a number of features of a solvency regime. These are discussed above. Using the minimum solvency margin as a measure of the capital adequacy of an insurer means that it should be a measure of the level of risk that the company is carrying. It is not possible to have a perfect measure under any circumstance. The best measurements require considerable data collection and information, something usually practical only in the company itself. Therefore, the minimum solvency margin necessarily must be an approximation and be capable of broad, practical application.

The ICPs note that it is useful to establish solvency control levels above the minimum solvency margin. As such, the validity of a point of intervention at, for example, 1.5 times the minimum solvency margin will represent different levels of risk for different companies. This distinction will be more consistent if the solvency margin itself reasonably approximates, or follows in broad terms at least, the level of risk in the company itself.

This section considers the nature of risk, the relevance of capital as a risk mitigation tool, sample structures for a solvency margin, and the use of control levels and stress tests as tools for greater resilience. It briefly comments on issues relating to branches and insurers that are part of conglomerates.



3.1 Risks mitigated by capital

There are many ways to break down the various risks that are faced by insurers and other financial institutions. Several risk taxonomies have been published. The differences among them tend to reflect the preferences of those who prepared them and the level of detail at which individual risks are identified. This module outlines a relatively simple taxonomy.

Ultimately, risk is considered as the potential for variability in outcome, particularly adverse outcomes. If a particular outcome is known with certainty, there is no risk. In reality, even in cases in which the certainty is high, it is rare that a business operation of any sort does not face some uncertainty of outcome. For example, if an enterprise holds notes and coins as an asset, it may feel that their value is certain. However, the value may be reduced in the case of losses due to inadequate storage, misadventure, or theft when insufficiently insured.

More practically, in the case of an insurer, consider the liability side of the balance sheet. The majority of the liabilities consist of provisions for obligations under insurance policies. Depending on the types of insurance, the outcome in terms of claims and their cost will be more or less certain. For non-life insurance policies, both the likelihood of a claim and its size are usually uncertain, whereas the timing of life insurance claims is always uncertain even if the amount of the payment is defined in the contract.

The uncertainty in the financial outcome of an insurance portfolio often is referred to as "technical risk" or "underwriting risk." Such risk relates to the uncertainty of the outcomes in policies, whether they are in force or have expired but for which claims either remain outstanding or could still be reported.

Considering the assets in which an insurer invests, the risks are similar to those faced by other investors.

- *Credit risk* generally refers to the potential that a counterparty may, by choice or inability, fail to repay its commitments to an investor.
- *Concentration risk* reflects the level of exposure to a single counterparty and should consider all types of commitments made from the counterparty together.
- *Liquidity risk* is the risk that an insurer will be unable to realise the value of an investment in a timely manner consistent with its needs.
- *Market risk* reflects the possibility that, even if an asset may be able to be realised, its value may have fluctuated adversely.

As discussed in section 2, for many types of risks that insurance face, it is possible to manage the assets and the liabilities so that fluctuations on the asset side of the balance sheet are matched by fluctuations on the liability side. However, this ideal is not always possible. The



extent to which risk may arise from mismatching should be considered in the capital adequacy requirements.

Efforts to measure most of these risks have led to a desire to apply risk mitigation techniques. A particular risk mitigation technique for insurers is to take out reinsurance, that is, transfer the risk to another party. However, transfer risk can lead to its own risk, because the mitigation may not be perfect. For example, if the definition of claims in the reinsurance policy differs from the definition in the insurance policies issued by the company, the cover may not be perfect in all circumstances. This discrepancy is referred to as basis risk, because the reinsurance claims are paid on a different basis than that of claims under the reinsured policies. Reinsurance also introduces counterparty risk as the insurer is dependent on the reinsurer being willing and able to pay its share of claims as they fall due".

Conventional wisdom has been that liquidity risk should not be a major concern for insurers. Normally, premiums exceed claim payments, and insurers are net investors. Similarly, if claims were to increase sharply, insurers can usually find mechanisms to make the payments progressively to avoid distress. In some cases, these mechanisms can include invoking clauses in contracts that enable the deferred payment of surrender values, or recognising that insurers do not have funds on call from the customer in the same way that a bank would or even paying claims by transferring the underlying assets rather than cash. Nevertheless, liquidity risk can have a significant impact on an insurer. See case study 1. In the event of an adverse outcome, the additional financial resources of capital can be available to meet most risks. However, the extent to which these resources can assist in dealing with a liquidity problem depends on whether these additional assets themselves are liquid. Recognising the difficulties inherent in quantifying liquidity risk, it is advisable that solvency implications be addressed through supervisory assessment rather than through quantitative capital adequacy requirements.

One additional risk that increasingly has been recognised is operational risk. This risk often is defined as "all other risks" but may be defined more explicitly. In particular, operational risk focuses on the adversity that can result from failures in the operations of the company. Examples of operational risk include a breakdown of procedures, failures in management, computer failure, poor recordkeeping, events that make it impossible for the insurer to operate from its regular offices, or even fraud. Operational risks vary widely and may be difficult to anticipate. While capital can mitigate operational risk, this type of risk also must be addressed effectively through good corporate governance, internal controls, and risk management practices.

Usually, consistent with the ICPs and principles on capital adequacy and solvency, there is a fixed minimum level of capital or solvency margin. The reason is that, regardless of the size of the insurer, some risks exist, and new insurers face particular risks. These challenges include difficulties in managing a start-up operation that do not exist in an ongoing business. An example would be not having adequate existing data to estimate the claims experience from



policies, compared to an established company that has good data. In addition, to quickly build their book of business to a viable size, new insurers may tend to accept riskier or less profitable business that an established company would pass up.

Absolute minimums also ensure that only operations of some substance are permitted to enter the insurance market. This standard is important in light of the unique nature of insurance, which requires an insurer to deliver on long-term and important promises.

3.2 Minimum requirements

Minimum solvency requirements must be clearly defined. The reason is that they identify the point at which final intervention occurs, that is, when the supervisor takes over the company and relieves senior management and owners of their rights. A requirement that is open to interpretation can hold up intervention in legal disputes. Such disputes can impede the important need to protect the interests of the policyholders. Thus, the minimum solvency requirement is usually defined in terms that enable it to be determined more precisely than the assessment of solvency, which is a matter of judgment, would suggest. To achieve more legal certainty, some matters of judgment need to be set aside.

Two main approaches are taken to define the minimum solvency requirement:

- The "index-based" method, and
- The "Risk-Based Capital" (RBC) method.

It is also possible to adopt an approach that reflects a middle ground. However, most jurisdictions are moving towards some form of risk-based capital method.

3.2.1 "Index-based" requirements

While all regimes involve a range of elements, an index-based regime is characterised by a solvency margin that is expressed as the greatest of a range of balance sheet or income statement indexes.

The required solvency margin is based on a relatively simple formula. One part is a minimum capital requirement that uses fractions of various indices of risk exposure. In other words, factors are applied to various figures taken from the balance sheet of the insurer, and the minimum solvency margin is taken to be the greatest of the calculated results.

Certain scale effects can be recognised. In particular, as the portfolio grows, the volatility of total claims in a portfolio of independent or negatively correlated insured risks increases at a slower pace than the average claim. These scale effects are reflected through the application of lower factors for the part of the exposure that exceeds a certain threshold.



The premium index may use gross premium income as a measure of exposure. The average claims cost is defined as the claims incurred, in contrast with claims paid, over the last three years. The various percentages would generally be determined using a mathematical approach called ruin theory. Ruin theory estimates the probability that an insurer will face financial ruin during a time period, taking into account its risk profile and level of solvency margin. The "greater of" the various calculations constitutes the solvency margin requirement.

Risk limitations and the credit given for reinsurance cover are additional features of the system. The effect of reinsurance may be reflected in calculating the required solvency margin. However, the reduction may be limited.

In summary, the index-based method broadly relates risk to various index measures. The larger the premium or the claims provisions, the greater the overall risk that the company is carrying. Some observers argue that this index-based approach has been widely used and has shown relatively good empirical results. However, it focuses on the liability side of the balance sheet and thus does not reflect all the risks faced by an insurer. Others contend that the indexes selected are a proxy for the overall risk of the enterprise. Most major jurisdictions have moved from index-based requirements to risk-based capital requirements, for example Solvency II in Europe.

3.2.2 "Risk-based capital" requirements

Risk-based capital (RBC) solvency regimes attempt to more closely reflect the risks assumed by each insurer in the calculation of its required capital. They use more complex formulas and statistical techniques than those employed in an index-based solvency regime.

These solvency regimes have requirements that cover each risk within a defined taxonomy.

Risk-based capital computations specify the minimum amount of capital required based on a company's size and risk profile. Major risk categories are:

- Asset risk
- Interest rate risk, primarily in life insurance
- Health credit risk, primarily accident and health insurance
- Underwriting risk
- Credit risk, especially with respect to reinsurance, and
- Other business risk.

The computation of RBC includes adjustments for correlation among risks and additional risks inherent in certain types of activity. Reinsurance is subject to specific limits, and the credit provided reflects the ability of the supervisor to recover insurance amounts owed by the reinsurers.



3.2.3 Internal models

A recent development in many jurisdictions is to allow the use of internal models. The benefit of using an internal model is that it more closely reflects the risks to which an insurer is exposed. However, it is costly and very complex, and has proven burdensome to get the model approved for statutory purposes. Additional observations

- Ultimately, a solvency regime is not simply driven by the solvency margin itself. The valuation of the assets and the technical provisions also influence the amount of the solvency margin in the accounts, and the parameters need to consider these elements.
- Actuaries and auditors can play a role in adding credibility to these accounting values in jurisdictions in which their professions are well developed. In other cases, the supervisor may have to make more specific and detailed rules directly on these elements as part of the overall solvency regime.

As shown by the examples in this section, while the structure of the solvency margin formula may differ, it must always be clearly defined. Finally, the solvency regime in every jurisdiction should reflect parameters that consider the risk in that jurisdiction. The adoption of, for example, the EU or US system without consideration of whether the parameters are appropriate in the local context may not result in adequate minimum solvency requirements. If risks are greater, or simply different, it is reasonable to have different parameters. If the accounting rules for the valuation of assets and liabilities or the treatment of reinsurance in the system are different, the resulting level of security provided to policyholders will be different if the same parameters are adopted without considering these differences.

3.3 Providing greater resilience

In the early phase of solvency regulation, a single solvency requirement or capital level obligation on an insurer usually was provided in the law. When an insurer fell below this level, the supervisory authorities would intervene to take over the company and take whatever action was necessary and permissible under the law to protect the interests of the policyholders.

More recently, it has been seen as desirable to have "solvency control levels". In effect, the concept of these levels is to reflect the fact that supervision does not stop above the minimum requirement or that the only action available to the supervisor is the final step of ultimate intervention. A comprehensive discussion of early intervention criteria and mechanisms is beyond the scope of this module. Importantly, however, a level established above the minimum serves as a valuable tool for the supervisor to graduate the intervention.



The minimum solvency margin criteria may be viewed as providing a buffer at a base level of security. If an insurer is below this level, the market and the lawmakers have determined that it should not continue to operate. However, insurers operating as going concerns should not be content to function on this minimum, that is, on the borderline. When a company is well above the borderline, the supervisor and the public can expect that it can withstand a period of adversity without falling below this critical level. This higher level provides the company with the opportunity to take corrective action and to allow this corrective action to flow through to a turnaround in its financial position.

Consider figure 1, which sets out a very specific example of how the control level may be used to trigger supervisory intervention. In practice, processes will not always be as definitive between levels as is discussed here. The purpose of this description is to illustrate one approach. In this case, the supervisor uses three control levels: a regulated minimum and two control levels above this. The control levels in the example increase over time in response to the growth of the insurer.



Figure 1. Insurer's position vs. Control levels

Initially, the company was below the first control level but not below the solvency requirement. The supervisor would be giving close attention to a company in this situation.

The company position improved such that it exceeded the first control level and moved into the higher band. In such a situation, the confidence of the supervisor in the insurer's viability



would have increased. Management had been able to execute a corrective action plan that worked well, although with a brief setback. Still, the degree of supervisory oversight was likely to reflect the concern that the company did not have as complete a capital buffer as it would have had if it had been above the second control level. Once the company exceeded the second control level, the supervisor became more comfortable with the company and less intrusive in its oversight.

In the example, the company continued under this less intense or "normal" supervision for an extended period before briefly dropping below the second control level. At this point, the supervisor became more concerned. Supervisory inquiries quickly produced an improvement in the situation. However, this improvement proved short-lived. The company's situation deteriorated rapidly and, in spite of increasing supervisory intervention, management's corrective actions failed to halt the deterioration. Eventually, when the minimum solvency requirement was breached, it became necessary to place the company into administration.

The example demonstrates that control levels can be used by supervisors to prompt earlier interventions on a graduated basis.

A second, equally important use of control levels is to encourage an insurer to explicitly incorporate solvency buffers when doing its business and financial planning. No insurer owner, board, or senior manager should be comfortable existing on the borderline of the ultimate supervisory intervention. Given the uncertainties of investment markets and insurance claims outcomes, there may be periods in which net worth declines, even if its general trend is upward. Therefore, management, boards, and owners should operate with a margin above the minimum level to avoid the risk of a "few bad days" leading to the company's being placed under official administration and to their personal loss.

Both of these arguments illustrate the usefulness of understanding risk (volatility of results) when assessing the adequacy of capital, capital buffers, and having levels of control above the minimum. The level of control, from the perspective of the supervisor as well as the company management and boards, should be such that:

- The existence of a problem can be identified
- Corrective action can be put in place. and
- The corrective action has a chance to take effect before the situation deteriorates.

Some jurisdictions establish control levels through legal instruments. Some do so by publishing their approach to intervention either with or without a precise numerical description of the actual levels. Supervisors in some jurisdictions, particularly those in which the number of companies is small, require each insurer to have a capital buffer policy approved by its board and then agree, formally or informally, to that internal level. Likewise, intervention can be more or less formal depending on the jurisdiction. Clearly, the ultimate intervention of



closure needs to have the full support of the law. However, depending on the history and practice in the jurisdiction, the use of moral suasion may play a significant role in higher-level interventions.

Another way that greater resilience can be promoted by a solvency regime is to test the effect of adverse situations on the company position. Stress testing is a very powerful tool that can be used by companies as part of their capital adequacy management systems.

Stress testing involves developing alternative scenarios and considering the effect that these scenarios would have on the company balance sheet position, either immediately or, in some cases, over time. Such testing can help the company identify significant risks and put in place procedures to limit these risks or plans to respond to the risks if they occur.

In some jurisdictions, stress testing is part of the broader solvency regime. Companies are required to perform stress tests as part of their risk management process, with results being considered by their boards. These tests then are discussed with the supervisor so that the supervisor can be comfortable that the company has adequately addressed the identified risks.

In other cases, the stress test can be part of the capital requirement itself. For example, for asset liability mismatch risks, a defined adverse scenario may be tested and the difference between the position under normal circumstances and the adverse scenario may be required to be held as an additional provision or reserve.

Many jurisdictions now require insurers to do what is generally termed an ORSA (Own Risk and Solvency Assessment), which is generally an internal tool that boards of insurers should use to assess the risk that the insurer is exposed to, and how these risks are managed and mitigated.

3.4 Issues related to branches and groups

When considering rules for solvency, special considerations arise in the case of branches of foreign insurers. The reason is that the branch is not a fully self-contained legal entity. Rather, it is part of the whole company, and that company is incorporated in another jurisdiction and does business in more than one jurisdiction. See case study 2.

A key concern of the supervisory regime is to ensure that the resources necessary to support policyholder obligations are available when needed. In the case of a *branch*, the capital is usually not segregated, and it is not possible for a branch operation to fail without the whole company failing. This situation is different from the case of a *locally incorporated insurer*, which could become insolvent even though the group or parent company remains solvent.

Of course, an insurer may become insolvent for reasons other than those relating to the assets and liabilities that are generated by its branch operations. If such insolvency occurs, the branch will nevertheless be affected. In contrast, in the case of a locally incorporated subsidiary, the



insolvency of its parent resulting from losses in business activities outside the subsidiary would not automatically cause the subsidiary to become insolvent. The parent company could sell the local subsidiary, which is a separate legal entity, to another owner. In the case of a branch, such a sale is not possible.

The legal requirements imposed on branches seek to limit the exposure of local policyholders to the risks associated with the branch legal structure. Supervisory requirements tend to focus on identifying the obligations to local policyholders and then securing the rights to assets sufficient to meet these obligations. These requirements provide some protection to policyholders without requiring a separate legal entity, thereby facilitating foreign branches.

For example, the regulations may require that assets equal to the technical provisions for the local business of the branch be held in the jurisdiction, under the control of a local authorised officer, or even subject to some control by the supervisor so that they will be available if needed. Some jurisdictions additionally require assets equal to the equivalent level of capital that would be required of a separate insurer to be held locally.

Some of the issues that arise with branch operations can be avoided by requiring the use of separate legal entities for various activities. However, if an insurer operates as part of a group, a different set of issues needs attention. These issues occur regardless of whether the group is locally owned, international, focused on the insurance sector, or more diverse in its scope of operations.

Risks can spread through a financial group when the group has transactions among its various entities. For example, if an insurer lends money to another company in the group, it would show that investment as an asset on its balance sheet. Without any adjustment to the solvency rules, this asset would count toward meeting the obligations to policyholders. If the borrowing company gets into financial difficulty, the value of the investment for the insurer may be at risk. In other words, the risk of the other company in the group is transmitted to the insurer, that is, contagion.

Although this credit risk may seem similar to that inherent in any investment, the risk is heightened because the lending decision may have been taken under pressure from group management rather than based on an objective assessment of the credit risk.

Another group risk is the potential contagion through the transfer of reputation. An insurer may be well run but may find that concerns arise in the minds of customers if there is some concern about another part of the group that operates under the same brand or name. In such cases, management must often take proactive steps to reassure customers that the problems in one part of the organisation has no effect on the insurer. For example, a supervisor may announce that it is investigating certain accounting issues with a non-life insurer. As a result, the life insurer operating separately but under the same brand name may suffer reduced sales and reduced confidence from the independent financial advisory community.



In the event of financial distress, related party assets often prove to be of limited value. A company that is badly run can use related party transactions to inflate the value of the assets of the group or to reduce the assets available to policyholders. Consider the following example, which also is displayed in figure 2.





An insurer and an investment company are both owned by the same parent holding company. Although the ultimate controller does not own the majority of the insurer via their 25 percent ownership of the holding company A, they nevertheless are able to control the board of the insurer by appointing directors with the votes of holding company B, which they control through 55 percent ownership. As a result, the insurer's loan to its sister investment company transfers assets away from the supervisory sphere of the insurance supervisor.

Multiple gearing of capital can also be a consideration. In the above example, multiple gearing could occur if the insurer were going to use some of its assets to purchase another insurer. The value of the newly owned insurer subsidiary would appear as an asset on the balance sheet of the existing company. However, part of this value would be the solvency margin of the subsidiary, intended to protect its policyholders. If the full value of the subsidiary were counted on the existing company's balance sheet for solvency purposes, the same capital would be providing protection twice and so be double counted. As a result, solvency regimes must include rules to avoid this double-counting of capital required for prudential purposes.

Recycling of capital can also occur in a group. Again using the above example, if the investment company were to take the proceeds of the loan from the insurer and lend them back to the



ultimate owner, the owner could use the funds to purchase more shares in the insurer. In effect, the assets of the insurer would have been used to increase its own capital. The more this type of transaction takes place, the greater the *reported* capital of the insurer when, in fact, there would have been no *real* improvement in its capital position. To restrict such practices, regulations usually make adjustments to the capital formula or prohibit such loans.

Ultimately, to address the concerns raised by the membership of insurers in groups, supervisors need to consider both the solvency of the insurer itself and the solvency situation of the wider group. In some jurisdictions, this is referred to as the "solo plus" approach. The term, "group-wide supervision," when used in reference to insurance does not mean that the individual entity is ignored and only the consolidated accounts are considered. Rather, it refers to the need to assess the group-wide situation and is in addition to the "solo" entity position. Several techniques can be used to assess group-wide capital adequacy of a financial conglomerate. They include the:

- Building block approach, which compares the sum of the capital required of each solo entity with the consolidated capital of the group.
- Risk-based aggregation approach, which compares the sum of the capital required of each solo entity with the sum of the capital of each solo entity minus any intragroup holdings of supervisory capital.
- Risk-based deduction approach, which adjusts the unconsolidated capital of the parent by deducting its investments in dependents, adding any excesses or subtracting any shortfalls of supervisory capital of the dependents, and compares the result with the parent's solo capital requirement.

As a quick check for double gearing, a total deduction calculation can also be made. It is similar to the risk-based deduction approach but provides no credit for any excesses of supervisory capital of the dependants.

Case study 2 gives a more practical example of how the capital between different entities in a group can be compromised.

3.5 Case study 2. Effect of insolvency on a branch

An insurer that had a large branch in another jurisdiction became insolvent. Assets held in the branch equalled liabilities to policyholders in that jurisdiction. However, a large portion of these assets consisted of debt securities issued by the parent. When the parent went under, the branch was no longer solvent. The debt was listed under *short-term securities*, for which solvency is rarely an issue, which hampered the detection of this problem.



Exercises – Section 3

Answer the following questions considering, where indicated, the practices in your jurisdiction. If you are working with others on this module, develop the answers through discussion and cooperative work methods.

- Ex 10 In some jurisdictions, the fixed-amount minimum capital requirements differ between life insurers and nonlife insurers. Why might that be the case? What are the fixed minimum solvency requirements for insurers in your jurisdiction?
- Ex 11 Would you describe the solvency requirements in your jurisdiction as being index based or risk based? How does the solvency regime in your jurisdiction respond to each of the following risks: technical, credit, concentration, liquidity, market, basis, and operational?
- Ex 12 Insurer A has been unprofitable, due to unexpectedly rapid increases in the cost of motor insurance claims. Management of the insurer has responded to this situation by increasing both premium rates and technical provisions. Solvency requirements in the local jurisdiction are calculated, in part, with reference to an insurer's premiums and technical provisions. What are the short-term and longer-term implications of management's action on Insurer A's solvency position? How might the supervisor respond to this situation?



4 Summary and conclusions

A fundamental objective of insurance supervision is protecting the interests of current and prospective policyholders. Solvent insurers with adequate capital should have the financial means to make good on their obligations to policyholders. Those that are financially weak often present a range of supervisory challenges and pose a greater risk of defaulting on their obligations.

Solvency difficulties can often be traced back to internal causes such as problems with management, shareholders, or other external controllers of the insurers. Clearly, good governance and risk management are essential to the maintenance of solvency.

Capital serves as a precaution against adverse experience and financial fluctuations, helping an insurer to maintain solvency while it deals with the many risks to which it is subject. While possible sources of capital are numerous, the relevance of each to a particular insurer will depend on such factors as its corporate legal form, who owns it, its stage of development, and its financial position and performance. The quality of capital depends on its availability to cover unexpected losses, both currently and prospectively. Preferably, capital should be both presently available and permanent.

Solvency regimes must address, in a consistent manner, liabilities, assets, matching assets with liabilities, suitable forms of capital, and capital adequacy requirements. For example, since solvency is fundamentally an assessment of an insurer's balance sheet, it is impossible to make an adequate assessment of solvency unless the liabilities and assets in the balance sheet are valued appropriately. In recent years, there has been a trend toward integrating quantitative solvency requirements into broader solvency regimes. For example, the EU Solvency II, the IAA recommendations, and the Basel II Capital Accord for banks each identify quantitative capital adequacy requirements, supervisory assessment of risk management, and disclosure of information as key elements, or pillars, of a broader solvency regime.

Risk is considered to be the potential for variability in outcome, particularly adverse outcomes. A relatively simple taxonomy of risks faced by an insurer might include technical, credit, concentration, liquidity, market, basis, and operational risks. New insurers may be subject to heightened risk. Each of these risks needs to be considered when establishing capital adequacy requirements.

The regulation of capital has two basic objectives:

- To provide a minimum level of resources considered prudent for supervisory purposes, and
- To provide a trigger for intervention.



Two main approaches are taken to define the minimum solvency requirement:

- The index-based method, and
- The risk-based capital (RBC) method.

An index-based regime is characterised by a solvency margin that is determined by using fairly simple calculations that refer to a range of balance sheet or income statement indexes. Risk-based capital solvency regimes attempt to more closely reflect the risks assumed by each insurer by using more complex formulas and statistical techniques.

However, there is some concern that neither of these approaches appropriately reflects the risks of insurers whose circumstances may vary significantly. Therefore, any jurisdiction considering changes in its solvency regime should take note of emerging international developments.

The solvency regime in every jurisdiction should reflect the circumstances in that jurisdiction. The adoption of another jurisdiction's system without consideration of whether its parameters are appropriate in a different local context may not result in adequate minimum solvency requirements. For example, the valuation of the assets and the technical provisions influence the amount of the solvency margin in the accounts, and the parameters need to consider these elements.

As should be evident from this module, determining how much capital will be adequate to ensure solvency can be a complicated and, to some extent, judgmental process. Nevertheless, the ICPs reinforce the fact that, while the establishment of solvency requirements is essential, the work of supervisors cannot stop there. Solvency must be monitored and assessed regularly, through both offsite and onsite activities.

Finally, if solvency problems are noted, supervisors must intervene.

Exercises – Section 4

- Ex 13 Each of the following three cases describes an insurer that presents a serious solvency challenge. For each case, answer the four questions below. If you are working with others on this module, develop the answers through discussion and cooperative work methods.
 - a) Why might the situation have occurred?
 - b) What elements of a solvency regime could help prevent its occurrence?
 - c) Given that it has occurred, what elements of a solvency regime could help protect policyholders from excessive loss?
 - d) What corrective actions would you propose?



Case 1

A bank has set up a composite insurer to provide life, annuity, motor, and property policies to its customers. The bank provides centralised human resources, investment, and accounting services to all group companies. The insurer has been growing rapidly in all lines of business. However, paid claims ratios on the nonlife business have been much higher than those of competitors, while the life and annuity lines experienced significant losses recently, when interest rates moved sharply.

Case 2

A large foreign nonlife insurer is operating locally through a branch. Its book of business includes local personal and small commercial clients, as well as very large risks arising from its multinational clients. Large risks are underwritten at the headquarters, where reinsurance is also arranged. Losses due to a recent fire that destroyed the factory of a multinational client exceed the assets invested locally.

Case 3

The board and management of a mutual insurer take pride in serving policyholders by charging low premium rates, providing long-term interest rate guarantees, and investing in their business ventures. A downturn in the economy has led to high investment defaults, market interest rates lower than the policy guarantees, and increased lapses.



5 Further reading

5.1 General sources

Many texts are available which are relevant to the material in this module. These texts may also go beyond the scope of this module, but usually include introductory chapters on the basic topics.

When reading these texts it is useful to consider the principles being as well as the details of their application in a particular environment. Also, it is important to recognise that as the environment changes the relative importance of issues may also change.

Other sources of information are also available. For example, in many countries there is an insurance institute of some form. The Chartered Insurance Institute (CII), based in England, provides a range of good educational programs and has links to more than 70 other insurance institutes worldwide (see <u>www.cii.co.uk</u>).

In some cases, supervisory websites are also valuable sources of information. This can be particularly the case when supervisors publish explanatory information explaining their requirements and approaches.



Review Questions

After studying this module on regulation and supervision supporting inclusive insurance markets, answer the questions below. The questions to help you gauge your understanding of this topic. An answer key is given in Appendix 1.

For each of the following questions, unless otherwise indicated, choose the response that is correct or most relevant.

- R1 An insurer can be considered solvent if it:
 - a) Has enough cash to pay all claims that are currently outstanding
 - b) Is able to meet its obligations under all contracts at any time
 - c) Has assets at least equal to its liabilities
 - d) Is part of a conglomerate that is rated B+ or higher by a rating agency
- R2 A shareholder-owned insurer may be able to obtain additional capital by:
 - a) Drawing upon a line of credit with its bank
 - b) Issuing shares and selling them to investors
 - c) Making special capital assessments against its policyholders
 - d) Borrowing money from its corporate parent
- R3 Suitable forms of capital include:
 - a) All assets in excess of an insurer's technical provisions
 - b) Margins of conservatism in the technical provisions due to the specification of a low discount rate by the supervisor
 - c) Retained earnings available to cover any unexpected losses
 - d) The proceeds obtained by issuing short-term debt securities
 - e) The amount indicated in a letter from the board of directors of an insurer's corporate parent expressing the intent to contribute additional funds
- R4 Insurer A operates in a jurisdiction that has an index based solvency regime. The minimum solvency margin is based on the maximum of three indices: 15 percent of premiums; 25 percent of claims costs; and 10 percent of technical provisions. The regime also includes an absolute minimum solvency margin of \$10 million. The financial statements of Insurer A show premiums of \$100 million, claims costs of \$80 million, and technical provisions of \$200 million. What is the minimum solvency margin that must be maintained by Insurer A?



- a) \$10 million
- b) \$20 million
- c) \$25 million
- d) \$30 million
- e) \$55 million
- f) \$65 million
- R5 Risk-based capital adequacy regimes generally require:
 - a) The application of factors to an insurer's technical provisions, but not to its assets
 - b) The use of internal models to determine the capital required for operational risk
 - c) The addition of the amounts of capital required in respect of various types of risks to calculate the total minimum requirement
 - d) The services of actuaries to make the calculations
- R6 The primary purpose of solvency control levels is to:
 - a) Establish a trigger for early intervention by the supervisor
 - b) Ensure that an insurer does not invest an excessive proportion of its assets in speculative ventures
 - c) Determine the portion of an insurer's assets that should be invested in local currency in order to meet obligations to local policyholders
 - d) Indicate when an onsite inspection may be required
- R7 A solvency regime may appropriately place different requirements on an insurer operating in the jurisdiction through a branch than on a domestic insurer because:
 - a) Branches have no capital that is legally their own
 - b) Domestic insurers may be more highly taxed than branches, so the competitive playing field must be levelled
 - c) Assets of a branch are likely to be invested in foreign currencies
 - d) Investment within the jurisdiction should be required in order to promote economic development



- R8 Techniques for preventing the inflation of capital that might otherwise occur in the case of an insurer that is a member of a corporate group include:
 - a) Calculating capital adequacy on a consolidated basis
 - b) Valuing investments in affiliates at book value
 - c) Closely examining the nature and financial impact of reinsurance placed with unrelated reinsurers by other companies in the group
 - d) Prohibiting the issuance of insurance policies to an insurer's parent
- R9 It is reasonable to expect an insurer to maintain sufficient capital to fully mitigate the potential effects of inadequate risk management.
 - a) True
 - b) False
- R10 Capital adequacy requirements ensure than an insurer will remain solvent.
 - a) True
 - b) False
- R11 Which of the following concepts of solvency requires the most capital to achieve?
 - a) Going concern
 - b) Runoff
 - c) Break up
- R12 The capital available to meet solvency needs is most limited in which situation?
 - a) Going concern
 - b) Runoff
 - c) Break up
- R13 Which *two* of the following risks are least amenable to being mitigated by capital?
 - a) Underwriting
 - b) Credit
 - c) Market
 - d) Liquidity
 - e) Operational



- R14 Provide at least *three* reasons why it is appropriate to require that a small, newly formed insurer have more capital, in relation to its premium income, than a large, well established insurer.
- R15 What are the *five* areas that a solvency regime should address in a consistent manner?
- R16 Insurer B operates in a jurisdiction that has a risk-based solvency regime. The minimum capital requirement is based on factors of 10 percent of premiums, 5 percent of technical provisions, 10 percent of assets invested in corporate bonds and 15 percent of assets invested in equities and real estate, with no adjustment for correlation of risks. The regime also includes an absolute minimum capital requirement of \$10 million and a solvency control level of 150 percent. The financial statements of Insurer B show premiums of \$100 million, technical provisions of \$200 million, and investments of \$50 in bank accounts, \$50 million in government bonds, \$80 million in corporate bonds, \$20 million in equities and \$30 million in real estate. What is the minimum capital required of Insurer B?
- R17 How much capital must be maintained by Insurer B to satisfy the solvency control level?



Appendix 1: Answers to Exercises and Review questions

Exercises

- Answer 1 All parties are interested in the continued viability of the insurer. However, the board and senior management may focus more on returns to shareholders, and the rate of return will be higher if excess capital is minimised. The supervisor's focus is on protecting policyholders, and additional capital increases the level of protection.
- Answer 2 Discuss with others in your supervisor.
- Answer 3 Discuss with others in your supervisor.
- Answer 4 Discuss with others in your supervisor.
- Answer 5 The first approach is generally easier to calculate and validate, while the alternative may provide a more accurate picture of an insurer's economic condition, although it may require more actuarial expertise, both at the insurer and at the supervisor. Discuss with others in your supervisor the approach used in your jurisdiction.
- Answer 6 Discuss with others in your supervisor.
- Answer 7 Limits on concentration of reinsurance may be established. Credit for reinsurance in excess of specified limits may be disallowed. The posting of collateral by reinsurers may provide further protection.
- Answer 8 Discuss with others in your supervisor the approach used in your jurisdiction.
- Answer 9 Discuss with others in your supervisor.
- Answer 10 Fixed amount minimums may differ if the level of resources required to establish a life insurer and build it to a viable size are viewed as being significantly different from those required for a nonlife insurer. Discuss with others in your supervisor the minimum requirements in your jurisdiction and how and when they were established.
- Answer 11 Discuss with others in your supervisor.
- Answer 12 In the short term, the solvency position may appear to worsen, because the higher premiums will translate into higher capital requirements and, therefore, less excess capital. In the longer term, the higher premiums should produce profits for the insurer, improving its level of capital. The supervisor might respond by requesting both short and longer-term projections of the insurer's financial position and considering the results in deciding whether an additional infusion of capital should be required.


Answer 13

Case 1

- a) It is quite possible that lack of insurance expertise is the root cause of the problems at this insurer. Rapid growth combined with high claims ratios provides an indication of underpricing. The losses on life and annuity business may be due to mismatching of assets and liabilities. Since many services are being provided at the group level, those doing so may have limited understanding of the insurance business and how it differs from the core banking business of the group.
- b) Supervisory review of premium rates, restrictions on investments, a requirement that an investment policy be adopted by the board and reviewed by the supervisor, a requirement that asset liability management be implemented, and stress testing could help prevent such a situation.
- c) Supervisory review of the adequacy of technical provisions, capital adequacy requirements, and solvency control levels could help protect policyholders.
- d) The insurer might be required to adopt an investment policy, implement ALM, reduce or stop writing new business, or obtain additional capital.

Case 2

- a) The local management of this branch does not fully control the business that is being written. Major financial and underwriting decisions are being made at the head office, which would appear to be focusing on overall results of the insurer without much attention to the financial position of the branch, that is, assets generated by the branch versus its liabilities.
- b) Risk concentration limits, reinsurance requirements that relate to the size of the branch, and a requirement that assets in the branch exceed liabilities to policyholders of the branch by a solvency margin all might help prevent such a situation. Separation of the local personal and small commercial lines business into an adequately capitalised subsidiary also could help protect such policyholders.
- c) Requirement that assets supporting local policyholders be held in a local trust, control of payments from the branch to the headquarters, supervisory monitoring of the financial condition of the insurer as a whole, and communication with the home supervisor could help protect policyholders.
- d) The insurer might be required to limit the branch's exposure to large risks, to invest more assets in the branch, or to cease writing new personal or small commercial policies.



Case 3

- a) The board and senior management of this insurer are excessively focused on customer satisfaction and growth, with inadequate consideration of the financial implications of their business approach. The insurer also might lack risk management expertise.
- b) Supervisory review of premium rates and policy provisions, a requirement that an investment policy be adopted by the board and reviewed by the supervisor, supervisory review of the nature and quality of invested assets, a requirement that asset liability management be implemented, and stress testing could help prevent such a situation.
- c) Asset quality and diversification requirements, a requirement that technical provisions explicitly reflect interest rate guarantees, supervisory review of the adequacy of technical provisions, capital adequacy requirements, and solvency control levels could help protect policyholders.
- d) The insurer might be required to adopt an investment policy that restricts investments in policyholders' businesses, implement ALM, reduce the interest rate guarantees and increase the premium rates for new business, or reduce or stop writing new business. If the insurer's financial position is very poor, it may be required to raise capital, which is very difficult for a mutual insurer, or be wound up.

Review questions

- Answer 1 b. See section 1.
- Answer 2 b. See section 1.
- Answer 3 c. See section 2.
- Answer 4 b. See section 3; capital required is the greatest of the various results.
- Answer 5 c. See section 3.
- Answer 6 a. See section 3.
- Answer 7 a. See section 3.
- Answer 8 a. See section 3.
- Answer 9 b. See sections 1 and 3. It is financially unfeasible to maintain enough capital to fully protect the solvency of an insurer that seriously neglects its risk management

Answer 10 b. See sections 1 and 3.



- Answer 11 a. See section 1.
- Answer 12 c. See section 2.
- Answer 13 d. and e. See section 3.

Answer 14 Any three of the following are correct; see section a:

- It needs to finance start-up expenses.
- Its new business acquisition costs are likely to be high.
- It will have a small flow of profits from existing business.
- It is at greater risk of adverse underwriting experience, due to its smaller and probably less diversified portfolio of business.
- It is at greater risk of asset value fluctuations, due to its small and less diversified investment portfolio.

Answer 15 All five of the following;

- Valuation of liabilities
- Quality, liquidity and valuation of assets
- Matching of assets and liabilities
- Suitable forms of capital
- Capital adequacy requirements
- Answer 16 \$35.5 million
- Answer 17 \$53.25 million



Core Curriculum for Insurance Supervisors Module 5.6.1 Solvency - Principles and structures



Core Curriculum for Insurance Supervisors

Module 5.6.1 Solvency - Principles and structures

Further information

Web: <u>www.iaisweb.org</u>

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Core Curriculum for Insurance Supervisors

Module 6.1.1

Consumer protection

Version 2.0 May 2018







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Using the Core Curriculum

Purpose

The IAIS Insurance Core Principles (ICPs) provide a globally accepted framework for the supervision of the insurance sector. The ICPs is suitable to apply to insurance supervision in all jurisdictions regardless of the level of development or sophistication of the insurance markets and the type of insurance products or services supervised.

The Core Curriculum provides non-commercial training materials to support insurance supervisors as they implement the ICPs. They give insight and background to the ICPs and the concepts underlying them. There is also a focus on the practical application of supervisory concepts.

Supervisory practices are constantly evolving reflecting experience and changing environments. Consequently, Core Curriculum materials should not be read as providing 'the answer' to a particular issue, but as providing guidance, approaches and matters to be considered by supervisors when they address specific issues in their own particular context.

Audience

The key users of the Core Curriculum material include:

- Trainers of insurance supervisors
- Individual insurance supervisors, and
- Other parties interested in sound and effective regulatory and supervisory practices.

Link document

The Core Curriculum Link document provides a mapping between the ICPs and the Core Curriculum modules. As ICPs and/or the Core Curriculum modules evolve, their relationship is described by the Link document (see <u>www.iaisweb.org</u>). This allows users to navigate from ICPs to relevant Core Curriculum modules and in the opposite direction.

Learning advice

Different users have different and will use the Core Curriculum modules in different ways. The Core Curriculum Learning advice document provides users with suggestions on using Core Curriculum materials to meet a variety of needs. You are recommended to use the Learning advice document (see <u>www.iaisweb.org</u>) to support your use of the Core Curriculum modules.



This module

Summary

The purpose of this Core Curriculum module, 6.1.1, Consumer protection, gives an overview of issues and processes to support supervisory review of the market conduct of insurers. This support the protection of consumers, and policyholders in particular. It considers concerns that may trigger examinations and areas that may be targeted for inspection. It also surveys the steps involved in designing inspections.

Learning objectives

When you complete this module, you should be able to:

- 1 Assess the fairness and adequacy of insurer practices regarding marketing and sales, on-going services to policyholders claims handling and complaint handling
- 2 List the types of information insurers and intermediaries should provide consumers before the conclusion of an insurance contract and during the period of coverage
- 3 List the types of information that to be sought from a consumer by an insurer or an intermediary to assess insurance needs before giving advice or concluding a contract
- 4 Recognise indicators that might prompt the supervisor to investigate an insurer or intermediary for its treatment of consumers
- 5 Describe the basic considerations involved in designing such an investigation
- 6 Describe the risks posed to consumers by insolvencies and inadequate business conduct and the methods you might use to minimise these risks
- 7 Describe the risks to consumers that arise when they purchase insurance across jurisdictional borders and through distance marketing, and the steps that the supervisor might take to reduce those risks
- 8 Assess the adequacy of methods used by insurers to protect the privacy of consumer information
- 9 Describe the ways in which consumers might be educated about insurance products and risks
- 10 List the methods that may be available to consumers to resolve insurance disputes without resorting to litigation



1 Introduction

Insurance is an intangible product as it focuses on future events. Policyholders pay premiums, sometimes for a long time before insured events occur. Policyholders cannot assess the overall quality of the insurance product when they buy it before the insured event occurs.

Also, there is often also an understanding gap between insurers and their distributors, and consumers who are policyholders or possible future policyholders. It is often difficult for policyholders to fully understand whether insurance contracts meet their expectations since they are legal documents set up by the insurer. Where policyholders rely on intermediaries it is crucial that they can expect intermediaries to perform their tasks in the best interest of the consumer.

Life insurers offer protection policies, such as term life insurance, and also often sell other products that focus on investment characteristics, such as for retirement savings. In contrast to protection policies, these investment products may properly be expected to provide an adequate return on investment over time to policyholders. Also, if the insurer fails the policyholders are at risk of losing some or all of their funds held by the insurer.

Non-life insurers typically offer protection products. It is also important for policyholders to understand the relevant contract features for non-life products. Features like coverage and exclusions impact assessing whether the product meets their expectations. Also, sometimes buying non-life insurance is compulsory, such as some types of motor insurance.

Where insurance is provided by profit-driven entities it is important to effectively regulate the fair allocation of profits between shareholders or owners and policyholders. Policyholders also need to be adequately serviced after they have bought an insurance policy. This is particularly the case for long-term insurance products and for claims settlement after the insured event has occurred.

The application of new technologies increases opportunities to buy and sell insurance products across national borders and to use new forms of distribution, such as the internet and mobile phones. These may increase availability of products to customers and improve services to policyholders but also raise additional risks for consumers and challenges for supervisors.

Insurance supervisors recognise these risks for consumers and usually seek to mitigate these inherent risks through consumer protection and education measures, and do not endorse a simple 'buyer beware' approach.

Supervisors typically set minimum requirements for insurers and intermediaries when dealing with consumers in their jurisdiction. Usually these requirements apply to all providers of insurance products, including foreign insurers selling cross-border.



These requirements normally address all stages of policy ownership from acquisition, maintenance and through claims to provide assurance that all contractual obligations are satisfied. These requirements also commonly govern the form, content (relevance and completeness) and timeliness of information provided.

Complaints and dispute resolution processes are considered good practice. Consumer financial education and literacy programs are also often put in place either by supervisors directly or with supervisors' support.

This module discusses some of the risks faced by consumers and explains ways in which a supervisor can respond to them. Other CC modules and ICPs focus on intermediaries.

1.1 Terms used

Many of the insurance related terms used in this module are defined in the IAIS Glossary of Terms (see <u>www.iaisweb.org</u>). When additional terms are used they are defined in the text.

The terms regulation and supervision are often used interchangeably, but they mean different things. In this module, regulators establish "the rules of the game," such as regulations and guidelines related to an Insurance Act (or Acts). Supervisors are the "referees" whose role is to oversee that these rules are complied with and deal with the consequences of non-compliance. This requires supervisors to apply judgement when making determinations and decisions. Understanding the difference between the regulators and supervision is important when allocating of responsibilities between regulators and supervisors, especially when they are different agencies.

In this module "supervisor" is used to include both regulators and supervisors. The module also assumes that supervisors are insurance supervisors. Supervisors, as determined by the context of the particular use, may be either the individuals working for a supervisory agency or authority or the authority itself.

While the terms used in this module are suitable for the purposes of this module, it may be that in specific real situations, more detailed definitions or explanations are necessary. These more detailed definitions may also vary between jurisdictions.

Some terms may not have unique meanings, and definitions contained in various sources may differ. To avoid ambiguity and reduce the risk of misuse and misinterpretation, readers should take care to be comfortable they are clear on the definitions of the terms used.

1.2 Insurance consumers

In this module an insurance consumer is defined as an individual who:

• Considers concluding an insurance contract (a potential policyholder), or



- Purchases a policy (a policyholder), or
- Has a valid insurance cover under which a claim may be filed, or
- Submits a claim under an insurance product or service.

This includes purchasers of insurance, persons insured under a policy (insureds), claimants (whether or not they own the policy) and beneficiaries (whether or not they own the policy).

For insurance, the definition of "consumer" may vary considerably between different jurisdictions. In this module, insurance consumers are be limited to those who are interested in insurance for personal, family, or household use. That is, the focus is on the consumer to business (insurer) relationship, not on a business to business (insurer) relationship.

Following from this, the most common types of insurance products for insurance consumers include automobile insurance, property insurance, health insurance and life insurance.

Consumers may buy insurance directly from an insurer or through an intermediary. In most cases, consumers might decide completely on their own whether to take out insurance or not. In some cases, such as third party motor insurance, purchase may be compulsory. Sometimes consumers are covered by an insurance policy purchased by another party, such as an employer or organisation they belong to. In these cases, this other party usually makes the purchase negotiation and decision. Since this other party often buys coverage for a group of individuals, this type of purchase is called 'group insurance'. Although the institution, company or employer is the policyholder in such cases and the contract is therefore considered as a business-to-business transaction, it is important that the insureds receive relevant information, either from the insurer or from the policyholder.

At a high level, supervisors generally require insures and intermediaries to:

- Act with due skill, care and diligence in their dealing with consumers, and
- Have in place policies on how to treat consumers fairly and provide training to ensure compliance with those policies by their employees and other sales collaborators.

How these objectives are addressed in practice can vary significantly between jurisdictions, and may reflect different approaches. This applies to both regulation and supervisory practices.

Exercises – Section 1

- Ex 1 How does your jurisdiction define 'consumers' in insurance?
- Ex 2 Are there types of insurance products particularly designed for consumers in your jurisdiction other than those listed above?



2 Consumer education and policyholder information

Both intermediaries and insurers have roles to play in educating and informing consumers, as well as in obtaining information from them.

2.1 Role of intermediaries

Due to the complexity of insurance products and the abundance of providers, most consumers rely on the advice of intermediaries when buying insurance. Intermediaries can be divided into two main groups: those who are appointed by and represent a specific insurer or insurers (usually called "tied intermediaries" or "agents") and those who represent the consumer (usually called "brokers"). Because their role is so important, insurance intermediaries are required by most jurisdictions to be licensed or registered or, in cases of tied agents, to act under the responsibility of a licensed insurer as a consumer protection measure. To obtain a license or registration, intermediaries usually are required to:

- Demonstrate their knowledge of the types of insurance products that they will sell
- Pass a background character check, and
- Obtain adequate insurance against liability that may result from their professional negligence.

Other CC modules and ICPs provide more information on the various roles of intermediaries.

2.2 Policyholder information

A key to protecting consumers is ensuring they are provided with full disclosure of pertinent policy-related and insurer-related information in a timely manner. Times when insurance consumers are most in need of such information include:

- At the point of sale
- Before policy renewals, non-renewals, and cancellations
- In case of the submission of claims
- Periodically during long-term insurance policies and annuity contracts.

2.2.1 Point of sale: information needed from the consumer

Consumers' initial need to supply and receive accurate and pertinent information arises when they are preparing to buy an insurance policy.

The insurer/intermediary must ascertain the consumer's current risk situation including any existing insurance policies and claims history, insurability, and needs; and then find the most



appropriate coverage at the best price. To accomplish these goals, the insurer/intermediary needs to obtain a fair amount of information from the consumer.

The insurer/intermediary also needs to ascertain the amounts of coverage that the consumer desires and can afford as well as any optional deductibles and sub-coverages. In addition, life insurance products require the intermediary to ascertain the consumer's financial security goals such as retirement income and after-death support for dependents.

Much of the information that consumers provide will become part of the written and signed policy application. While consumers may be tempted to omit or distort information to lower their premiums, it is important that they be aware that relevant misrepresentations on their part may, if discovered, lead to the denial of claims, reduction of payments by the insurer or even criminal prosecution. For this reason, supervisors often require that applications contain prominent warnings to consumers of the risks of omitting information or providing false information.

2.2.2 Point of sale: Information to be provided to the consumer

Conversely, the consumer also needs information from the insurer/intermediary. The supervisor should set requirements for insurers and intermediaries regarding the content and timing of provision of information:

- On the product, including the associated risks, benefits, obligations, and charges
- On other matters related to the sale, including possible conflicts of interest to existing or potential policyholders.

Prior to the sale, the insurer/intermediary should provide the consumer with detailed information on the policy, including effective and expiration dates; the persons or properties that will be covered; coverage provisions and exclusions, such as policy limits, deductibles, face values, and bonuses (if applicable); and beneficiary provisions.

The insurer/intermediary should provide consumers with information about the total premium and on any taxes or fees that will be charged. If any portions of the premium are not specified at the point of sale, this should be made clear to the consumer, and examples of potential costs should be provided where feasible. Finally, consumers should be provided with premium payment information, including payment plans where available.

In addition to detailed information on the product and premiums to be charged, it is important that, prior to the sale, the insurer/intermediary provides information to the consumer on the insurer/intermediary and on complaint contacts. Such information should include:

- Insurer's name, address, phone and license
- Intermediary's name, address, phone, and license



- Intermediary's relationship to the insurer
- Contact information for the supervisor and, if applicable, for ombudspersons and for alternative dispute resolution (ADR) mechanisms for the submission of complaints and disputes.

In order to allow the consumer to take an informed decision on whether or not to enter into an insurance contract it is important that the potential policyholder receives all relevant information prior to his/her binding acceptance of the offer.

For group insurance policies, in which the consumer is an insured party but is not the policyholder, information pertinent to the consumer usually is provided by the policyholder to the consumer through a document provided to each party insured under a group insurance contract that describes the coverage provided as well as the insured's rights under the contract.

Insurers should provide privacy notices at the point of sale. These notices, alert policyholders to the kinds of non-public personal information that the insurer collects and how it safeguards protection of that information.

2.2.3 Renewals and cancellations

Unnecessary lapses, cancellations, and non-renewals of insurance policies are disruptive and usually costly to consumers and insurers. Insurers should provide policyholders with adequate written notice if they intend to renew fixed-term policies that are not guaranteed renewable so that policyholders can plan accordingly.

A residual market plan is a mechanism through which high-risk insureds who cannot obtain insurance through normal market channels are insured. In jurisdictions that have residual market mechanisms, non-renewal and cancellation notices should include contact information for applying to residual markets.

Renewal notices routinely include the amount of the renewal premium.

Reasons for cancellation that require only a short forewarning to the insured often include:

- Non-payment of premium,
- Concealment or misrepresentation of significant facts during the application process, and/or
- Submission of a fraudulent claim.



2.2.4 Submission of claims

Typically, insurers take several distinct steps in settling a claim, such as providing the claimant with notices, forms, payment checks, and other documents. Many jurisdictions specify the maximum amount of time that insurers may take to perform each of these steps for their claimants.

2.3 Consumer outreach efforts

Supervisors, government agencies, industry associations, and consumer organisations individually or jointly can attempt to educate consumers about insurance coverages, costs, and pitfalls as well as seek feedback and complaints from consumers. Outreach methods for these purposes can include brochures, toll-free hotlines, press releases, newspaper and magazine articles, teaching materials for schools, public events, media talk shows and websites.

Supervisors' websites are becoming an increasingly important method for broadcasting information. Supervisors commonly use their websites to post and update various kinds of consumer information including lists of licensed or registered insurers, premium comparison guides, alerts on fraudulent operations, online submission of complaints and complaints statistics.

Premium comparison guides can be particularly helpful to consumers. Such guides show the premiums that each insurer charges for automobile, homeowner's, and other types of standard insurance products. For a given type of insurance, premiums are displayed for a select sample of hypothetical insureds of different ages, genders, claim histories, locales, insured properties, and other risk characteristics.

Exercises – Section 2

- Ex 3 Which distribution channels are most used in your jurisdiction for selling insurance products? What are the licensing or registration requirements for insurance intermediaries in your jurisdiction?
- Ex 4 What residual market mechanisms, if any, exist in your jurisdiction?
- Ex 5 For what reasons are insurers in your jurisdiction allowed to cancel policies before their expiration date?
- Ex 6 What consumer outreach methods are in place or would be most effective in your jurisdiction?



3 Policy forms and rates

3.1 Coverage provisions

Insurance policies are legal contracts crafted by lawyers and insurance experts. Many policies include a variety of provisions that restrict or eliminate coverage under various circumstances. Such exclusionary provisions can be difficult to understand and can seriously weaken the overall coverage provided to the consumer by the policy.

Supervisors could play a relevant role in promoting the consumers' understanding of insurance contracts.

Some supervisors review all insurance products sold by licensed insurers to consumers in their jurisdictions to ensure that all policy forms, endorsements, riders, applications, and other standard components of insurance contracts contain coverage provisions that comply with applicable laws and regulations, are easy to read and understand and do not conflict with the public good.

Required provisions and disallowed provisions vary by jurisdiction and by type of product.

3.2 Readability

Supervisors may require that consumer insurance policies are written and printed in such a way that the average person can understand them. To achieve this, policies should be written in everyday, conversational language consistent with their legal standing as a contract.

Ways to make policies more readable include simplifying policy language, organising the content in a clear and logical manner, and using good graphic layout.

3.3 Rates

The derivation of premiums charged for insurance products is a mystery to most consumers, who simply rely on market competition to keep premiums as low as possible. Equally confusing to consumers are the differences in premiums charged for various options in coverage limits, benefits, deductibles, and co-payment provisions.

It is important that rates and rating methodologies used to determine premiums are not excessive, inadequate, or unfairly discriminatory. Rates and rating methodologies include everything used to determine the premium that a policyholder is charged, such as manuals of rates for each class of risk, all initial and recurring charges and commissions and instalment fees for premium payment plans.



Supervisors often do not have the actuarial and staff resources to thoroughly scrutinise consumer rate filings. In some cases, supervisors require appointed actuaries or other experts to certify the appropriateness of the rates or rating methodology.

3.3.1 Actuarial capacity

In order to be able to properly monitor the premium calculation, the setting of technical provisions and assessing an insurer's solvency position supervisors need sufficient actuarial skills and resources. Actuaries are professionally trained to evaluate the financial implications of contingent events. Actuaries require an understanding of the stochastic nature of insurance, the risks inherent in assets and the use of statistical models. For example, these skills are applied to establish premiums and technical provisions for insurance products, using the combination of discounted cash flows and probabilities.

A universal concern of consumers is that their insurance rates not be too high. In theory, a transparent and competitive marketplace with well-informed consumers will self-police its own rates. However, it is important to make sure that potential policyholders have sufficient information available on rates before the conclusion of a contract in order to make an informed decision. For unilateral increases of rates during the contract period, regulations need to clearly define a methodology for those increases.

On the other hand, inadequate rates are commonly not a concern to policyholders. However, insufficient premiums may destabilise insurers, threaten their financial position and can contribute to insurer insolvencies. Insurer failures can be detrimental to consumers as they might lose their insurance coverage and in life insurance also lose their savings on the contract. Insurance guarantee schemes may provide a safety net for consumers in such cases.

3.3.2 Checking for unfairly discriminatory rates and rating practices

Rates and rating practices are unfairly discriminatory if they produce higher premiums for certain policyholders or demographic groups that are not correlated with increased risk for these policyholders or groups. In addition, it is widely accepted that the use of race, national origin, religion or income as rating factors should not be allowed, even if they correlate with insurance risk.

Gender is prohibited as a rating factor in some jurisdictions. Also, some jurisdictions allow supervisors to prohibit rating practices that disadvantage a particular demographic group, such as low-income ethnic minorities or those inflicted with HIV/AIDS, even if there is evidence that the particular demographic group is costly to insure.



Exercises – Section 3

- Ex 7 Are you aware of any issues concerning the readability of consumer insurance policies in your jurisdiction?
- Ex 8 What actuarial resources are available to the supervisor in your jurisdiction?



4 Unfair business practices

As mentioned earlier, most consumers have a limited understanding of the complexities of insurance products and, quite properly, rely on the advice of insurers or insurance intermediaries. Unfair business practices arise when insurers or intermediaries take advantage of this imbalance in insurance knowledge in their marketing, sales, underwriting, and rating practices.

4.1 Deceptive and unfair marketing and sales practices

Insurers and intermediaries take unfair advantage of consumers at or before the point of sale if they exaggerate the coverages and services provided, fail to mention exclusions and other product shortcomings, downplay the true price, or fail to mention hidden costs or contingencies.

Specific examples of deceptive or unfair marketing and sales practices can include:

- Using advertising and sales materials, intermediary training materials, and/or mass-marketing activities that are false or deceptive
- Selling products through inadequately trained intermediaries
- Selling consumers more coverage than they need
- Misrepresenting a product's coverages, rates, terms, or benefits
- Failing to provide life insurance customers with full and accurate "illustrations" showing how costs and benefits may change with future changes in interest rates and other variables
- Making unfair or incomplete comparisons among insurance policies to induce policyholders to replace their current policy, called "twisting"
- Investing life insurance funds in riskier assets than those promised in marketing materials or contractual agreements.

Deceptive practices include fraudulently posing as an insurer or insurance intermediary or otherwise offering insurance-type products without a license. An example is the proliferation of fake insurers and unlicensed intermediaries selling fraudulent health, life, and funeral insurance plans.

4.2 Unfair underwriting practices

The key ingredient of good underwriting is the ability to properly assess the risks to be covered, in other words to distinguish good risks from bad risks. Insurers are expected to develop and maintain written guidelines to help determine which risks to accept and which to



decline. These guidelines should reflect a mixture of statistical analysis of the marketplace and underwriting judgment. Nonetheless, insurers and their underwriters will occasionally make decisions that supervisors view as unfair or illegal, such as using policy forms and endorsements that have not been filed, if required, with the supervisor or using

- Intermediaries who are not properly licensed and appointed, if required, or
- Refusing to insure an applicant because they have been rejected by another insurer

4.2.1 Unfair discrimination in underwriting

Issues involving social discrimination occur when either statistics or judgment lead insurers to believe that certain races, genders, age brackets, income levels, or credit histories generally represent worse than average or better than average risks. Insurers might act on such beliefs on a broad scale when defining the targets of their marketing efforts or on an individual basis when accepting or declining applications.

When such assessments are grounded in actuarial statistics or insurance legislation, supervisors may allow them. Examples include higher automobile insurance rates for young drivers and lower homeowner insurance rates for people with good credit histories.

However, social discriminations that are based primarily on judgment often are either illegal or are viewed by insurance legislation or supervisors as unfair. Examples of unfair discrimination usually include refusing to insure an applicant, or otherwise disadvantage a consumer, because of their gender, marital status, sexual orientation, race, ethnicity, religion, or income.

4.3 Unfair rating practices

Insurers are expected to develop, maintain, and adhere to their rating manuals that detail all the steps involved in calculating the premium to be charged for any coverage offered on any given risk. These processes should be fair.

The following are examples of unfair rating practices:

- Charging premiums that are not in accordance with filed rates and rating manuals
- Permitting illegal rebating, commission cutting, or other kickbacks to intermediaries or policyholders
- Applying credits and deviations in an inconsistent or discriminatory manner
- Charging higher or lower premiums to applicants or policyholders due to any reason not directly related to the respective insurance risk, like gender, marital status, sexual orientation, race, ethnicity, religion, or income.



4.4 **Poor administration of policyholder accounts**

As with banks and other entities entrusted with the proper handling of other people's money, insurers are responsible for maintaining accurate accounting of various funds held in policyholder accounts. Such accounts include:

- Provisions for premiums paid but not yet earned. This includes the accurate calculation of the amount of money to be returned to a policyholder if their policy is cancelled before its expiration date.
- Cash surrender values, benefit amounts, outstanding loan balances, and other account values in permanent life policies, as well as the allocation of such funds to the proper investment portfolios.
- Policyholder dividends that have been paid or are payable for insurance policies that provide for participation in profits.

The poor administration of such accounts can lead to the improper calculation or denial of return premiums, life insurance benefits, and policyholder dividends as well as the improper investment of policyholder funds and errors or delays in the payment of claims.

4.5 Ways to combat unfair business practices

There are several possibilities to combat unfair business practices, such as the following:

- The requirements for obtaining and maintaining an insurance license or registration should be designed to ensure that intermediaries and insurance executives have adequate knowledge, experience, integrity, and financial resources to conduct insurance operations fairly and reliably
- Insurers should be required to maintain internal controls to prevent unfair, deceptive, or unprofessional business practices
- Insurers, supervisors, and ombudsmen can provide consumers with opportunities and methods to submit complaints against such practices
- Supervisors may be empowered to carry out onsite investigations into the business conduct of insurers and intermediaries suspected of engaging in such practices. Supervisors can take actions ranging from fines to the revocation of licenses or registrations if wrongdoing is revealed.



Exercises – Section 4

- Ex 9 What fraudulent insurance schemes, if any, have recently been issues in your jurisdiction?
- Ex 10 What demographic underwriting considerations or rating factors are not permitted in your jurisdiction?



5 Claim and complaints handling

The majority of consumer complaints relates to claims and benefit payments. While most insurers handle and pay claims and benefits in a timely and fair manner, some insurers may succumb to the temptation to look for ways to avoid or delay paying claims, particularly when under financial stress. Therefore, insurers and intermediaries should be required to deal with claims and complaints effectively and fairly through a simple, easily accessible, and equitable process.

Insurers may try to avoid paying legitimate claims, cash value settlements, policyholder dividends, and other benefits in a number of ways. Some examples are:

- Denying a claim without conducting a reasonable investigation
- Needlessly delaying the investigation or payment of a claim
- Requiring unnecessary or duplicate reports or documents
- Failing to explain the reason for denying a claim
- Paying or offering to pay less than a reasonable amount
- Refusing to communicate the status or outcome of a claim investigation
- Failing to adopt and follow reasonable guidelines for handling claims and other benefits
- Misrepresenting relevant facts and coverage provisions
- Compelling claimants to sue to get a proper settlement.

It is critical that insurers adopt and follow detailed internal guidelines and procedures for the fair and prompt handling of claims and other policyholder benefits. Such guidelines, among other things, should require review by senior management of claim and benefit decisions that exceed particular monetary or other thresholds. These guidelines also should list the steps required and timeframes allowed to investigate and process claims and benefits.

5.1 Consumer complaints

It is important for the protection of consumers that their complaints against insurers and intermediaries be promptly and fairly investigated and processed by the insurer and that those complaints also be knowable to the supervisor. Supervisors can learn of complaints:

- Directly from consumers
- Through inspections of insurers' complaint databases
- Through formal reports from insurers on claims and claim handling



• From ombudsmen, that is an official appointed by an appropriate governmental, industry or other body to investigate consumer complaints.

Supervisors depend on insurers' complaints databases for the review and investigation of the full body of recorded consumer complaints. The ability of a supervisor to scrutinise complaint databases provides additional motivation to insurers to treat consumers and complainants properly. Such databases should in particular include the nature of each complaint, the relevant line of business and the time required to process each complaint.

5.2 Alternative dispute resolution methods

Despite the efforts of insurers and supervisors, from the consumer's viewpoint, a fair number of complaints do not get satisfactorily resolved. In these situations, litigation remains, or should remain, an option. However, it is often to the consumer's benefit to resolve disputes in ways that are simpler, quicker, cheaper, and less stressful than litigation.

Various alternative dispute resolution (ADR) methods, that is methods that do not involve courts and litigation, have been developed in many jurisdictions. These methods are often administered by government bodies or by industry associations that include consumer representatives. Regardless of the sponsoring body, most ADR methods involve the key assistance of a neutral party knowledgeable in the type of issue that is under dispute. This neutral party, often an ombudsperson, renders a finding or decision after hearing both sides argue their cases.

When the insurance industry administers the dispute resolution mechanism, the decisions of the ombudsperson usually are binding on the insurer but not on the consumer, who retains the right to take the matter to court. When a government agency administers the dispute resolution, the decisions of the ombudsperson often are binding on both parties.

Consumer protection is strengthened when insurance policies contain clauses that allow the policyholder to decide whether to use ADR or go to court. Many supervisors therefore do not allow provisions in insurance policies that mandate the exclusive use of ADR.

Exercises – Section 5

- Ex 11 What methods and venues do consumers in your jurisdiction have to submit complaints?
- Ex 12 Does the supervisor in your jurisdiction use information on insurance complaints when performing its supervisory tasks? What alternative dispute resolution mechanisms are available to consumers in your jurisdiction?



6 Investigations of business conduct

As mentioned earlier, some insurers and intermediaries do engage in various unfair and deceptive practices toward consumers. Such practices often produce a high level of consumer complaints.

6.1 Business conduct

Business conduct rules deal with the treatment of policyholders, claimants, insureds, and beneficiaries by insurers with regard to claims handling, underwriting and rating, policyholder service, complaint handling, and marketing and sales.

To investigate alleged patterns of misconduct toward consumers, it is important that supervisors conduct onsite investigations into the business conduct of insurers and intermediaries. Supervisors may also use offsite supervision tools, such as screening insurers' websites. Business conduct investigations may be routine examinations or triggered by a high level of complaints or a large market share.

The methods and standards that supervisors use in such investigations should be fair and unbiased, transparent, open to public inspection, and known in advance to the industry. Such investigations may focus on particular products or coverages as well as on one or more of the following operational areas:

- Underwriting and rating
- Policyholder service, such as required notices and account management
- Claims handling
- Complaint handling
- Marketing and sales.

Once the supervisor determines which product lines and operational areas to inspect, it should compile a list of specific supervisor standards that the insurer may be violating. For example, an inspection may be focused on claims handling, as claimants have alleged that the insurer is slow in investigating claims, often provides unrealistically low settlement offers, and does not communicate reliably with claimants. The supervisor may choose to inspect the insurer's compliance with the following standards:

- Insurers initial contacts with claimants are within required timeframes
- Insurer conducts timely investigations
- Claims are resolved in a timely manner
- Insurer responds to claim correspondence in a timely manner



- Claim files are adequately documented
- In cases of clear liability and coverage, the insurer does not offer claimants unreasonably low amounts.

Exercises – Section 6

Ex 13 If business conduct investigations are performed in your jurisdiction, what most commonly triggers them?



7 Insolvencies and monopolies

7.1 Insolvencies

A sound business model, financial strength and good corporate governance, in particular experienced management, are the best indicators that an insurer will remain in business to fulfil its commitments. Nonetheless, all insurers, even the biggest and strongest, run the risk of failing financially, perhaps for reasons and events beyond their control.

When insurers become insolvent, consumers face the risk that existing claims, or claims that may yet arise during the remainder of their coverage period, may not be paid and that any other services that they have a right to expect from their insurers may no longer be provided. For these reasons, it is in consumers' best interest to examine, either directly or with the help of their intermediaries, the strength of a particular insurer prior to purchasing its products.

Examinations are particularly important when buying insurance for life, as the insurer need to remain strong throughout the consumer's lifetime. Life insurance policyholders should also be encouraged to study the annual financial communications from their insurers.

7.1.1 Guarantee funds

Many jurisdictions have established guarantee funds to pay the claims of insolvent insurers. These funds are often funded by levies from licensed insurers in proportion to each insurer's prorated share of the market in the jurisdiction. Some guarantee funds are prefunded before insolvencies occur, and others charge insurers only in response to specific insolvencies.

Most guarantee funds cover only certain types of insurance and often limit the amount of claim payments. These provisions are intended to give highest priority to the disbursements of funds to consumers and to small businesses.

While the social benefits of guarantee funds are clear, the following negative consequences may also arise:

- Ultimately, contributions to guarantee funds are passed on, at least in part, to consumers in the form of higher premiums
- Contributions to guarantee funds penalise the prudent business practices of solvent insurers by forcing them to pay for the underpriced products and other imprudent business practices of their now-insolvent competitors
- The insolvencies of very large or a series of insurers can strain the resources of guarantee funds and leave claimants and other creditors with only a fraction of the reimbursements to which they otherwise would have been entitled



• The "safety net" provided by guarantee funds may entice insurers to underprice their products and lower their underwriting standards.

7.2 Monopolies

Dangers for consumers can also arise from high concentration in the market. When an insurer or group of insurers monopolise or otherwise exert undue control over products in the insurance marketplace, prices for these insurance products tend to increase and the range of coverage options available to consumers tends to diminish. If there are only very few viable insurers in the marketplace, residual market mechanisms, such as mandatory pools for insuring unattractive risks and sharing the experience among all insurers, tend to grow as consumers find it harder to obtain affordable insurance coverage in the voluntary market.

If a very large carrier goes insolvent, the resulting unpaid claims may either exceed the resources of the guarantee fund or require severe assessments that disrupt the market and ultimately are borne by consumers or taxpayers.

7.3 Licensing criteria

As a first line of defence against insolvencies, supervisors should license or register only the insurers that can demonstrate that they have

- Sound corporate governance in place,
- An experienced and reputable management team, a viable business plan, and
- Adequate capital to support their current and planned operations.

Supervisors should revoke licenses or registrations if an insurer does no longer fulfil any of the licensing or registration criteria and does not remedy this situation.

Exercises – Section 7

Ex 14 What guarantee funds, if any, exist in your jurisdiction? How are they administered and funded?



8 **Privacy of consumer information**

The electronic era has led to the capture and dissemination of increasing amounts of personal information about consumers. Insurers use this information when reviewing policy applications, determining rates, processing billings, handling claims, and marketing their products. There is an increasing risk that this information may be obtained by inappropriate entities and used for inappropriate purposes. Supervisors can contribute to the protection of private information when setting rules on the handling of customer information by paying attention to the protection of private information of customers.

The types of personal information that can cause damage to consumers, if mishandled, include highly sensitive information like medical records, lifestyle, credit card numbers, credit reports and credit or claims history.

To safeguard the privacy of consumer information, insurers should be prohibited from obtaining information under false pretences, and supervisors should encourage or require insurers and intermediaries to:

- Maintain procedures to safeguard such information
- Inform consumers of the insurer's privacy policies and practices
- Allow consumers, without penalty, to opt out of allowing their information to be further used or disseminated.

8.1 Information security programs

Insurers should be encouraged or required to develop and implement comprehensive written information security programs that include administrative, technical, and physical safeguards to protect consumer information. These safeguards should be appropriate to the size and complexity of the insurer and to the nature and scope of the insurer's activities.

The goals of these security programs are to:

- Ensure the security and confidentiality of consumer information
- Protect against any anticipated threats or hazards to the security or integrity of the information
- Protect against unauthorised access to, or use of, the information that could result in harm or inconvenience to consumers.

An insurer's information security program should include procedures to:

- Train its staff to properly implement the program
- Test or monitor the program's key controls, systems, and procedures regularly



• Require service providers to implement appropriate measures to safeguard the insurer's customer information while it is in their possession

An insurer should adjust its information security program as changes occur in, for example:

- Relevant technology and its applications,
- Sensitivity of the consumer information,
- Internal or external threats to this information, and
- The insurer's business arrangements. Such as mergers, alliances, outsourcing, and consumer information systems.

8.2 **Privacy notices to consumers**

Insurers should provide their customers with written notices regarding the insurer's use of personal information as well as any rights the consumer may have to further restrict the dissemination of such information. The timing and frequency of such notices may vary by jurisdiction.

Exercises – Section 8

Ex 15 Is the privacy of consumer information viewed as a problem in your jurisdiction? If so, what steps do most insurers in your jurisdiction take to protect such information from unwanted dissemination?



9 Cross-border issues and distance marketing

Many insurers sell and administer their products in multiple jurisdictions, whether through traditional methods or through "distance marketing" methods such as the internet. Problems arise when insurers sell in jurisdictions in which they or their products are not licensed.

Furthermore, products such as automobile insurance and accident and health insurance often offer worldwide coverage. It is generally understood that the laws and regulations of the jurisdiction in which the policy was sold or the risk is located should prevail. However, cross-border disputes still can arise when claims occur.

Purchasing insurance on the internet, while offering unique marketing opportunities and efficiencies, also presents consumers with new risks, including:

- Lack of an insurer/intermediary to explain the product and advise the consumer
- Uncertainty over whether the insurer or the product are authorised in the consumer's or any other jurisdiction
- Unwanted dissemination of private consumer information
- Difficulties in enforcing claims or benefit payments.

Insurance products offered across borders or through distance marketing are subject to the same requirements as insurance products offered locally and through intermediaries. The insurer and intermediary (if used) should be licensed or registered in the consumer's jurisdiction and be subject to the same laws and regulations regarding business practices and consumer notifications discussed earlier.

The supervisor should provide information to the public about whether and how local legislation applies to the cross-border offering of insurance, such as e-commerce. The supervisor should issue warning notices to consumers when necessary to avoid transactions with unsupervised entities.

9.1 IAIS Multilateral memorandum of understanding (IAIS MMoU

In addition to educating consumers on distance marketing risks and on known fraudulent operations, supervisors can reduce cross-border problems by developing working relationships with their counterparts elsewhere. A frequently used tool for this purpose is the IAIS Multilateral memorandum of understanding (IAIS MMoU). This is a written statement of intended cooperation among all supervisors from different jurisdictions that are signatories to the MMoU.



Exercises – Section 9

- Ex 16 Which forms of distance marketing are used in your jurisdiction and for which insurance products? What regulatory oversight exists over these sales?
- Ex 17 Is the supervisor of your jurisdiction signatory to the IAIS MMoU? Have you encountered cases of bad business conduct by insurers in a cross-border context?



10 Summary

This module has discussed various dangers to which insurance consumers are exposed and the ways in which supervisors strive to protect consumers. The discussion focused on insurance products for personal, family, and household use, including automobile, property, life, and health insurance. The imbalance in insurance knowledge between consumers and insurance professionals, and the important advisory role of intermediaries, were noted.

There are various situations when consumers need to obtain information from, or supply information to, insurers and intermediaries. Key types of information and notifications expected have been highlighted. Supervisors, industry associations, and other organisations use various methods to provide helpful information to consumers.

Insurance contracts and policies should be easy to understand and comply with applicable laws and regulations regarding mandated provisions and prohibited exclusions. Rates also need to be appropriate for the underlying risks and coverages provided and not be unfairly discriminatory.

A range of unfair business practices may exist in marketing, sales, underwriting, rating, and claims handling. Some ways supervisors can curb these practices were mentioned in the module. Methods for encouraging the submission and reporting of complaints were discussed, along with methods other than litigation that might be used for resolving disputes between consumers and insurers.

The module provided an overview of business conduct investigations of insurers, including concerns that may trigger such examinations and areas that may be targeted for inspection. It also surveyed the steps involved in designing such examinations.

Insurer insolvencies and monopolies present dangers to consumers. Licensing requirements can help to protect consumers from such dangers, while detailed financial examinations of all insurers can provide early warning and allow supervisory intervention before insolvencies occur. The value and the shortcomings of guarantee funds in protecting consumers after insolvencies occur were discussed.

Insurers and intermediaries must safeguard the privacy of the financial, health, insurance, and identity information of consumers. Consumers should also be advised of their right to limit the dissemination of personal information.

Finally, we noted the risks posed by the sale and use of insurance products across jurisdictional borders and through distance marketing methods such as the internet. Communication and active cooperation among supervisors of various jurisdictions are essential in dealing with such risks. The use of the IAIS MMoU can support such cooperation.


11 Further reading

11.1 General sources

Many texts are available which are relevant to the material in this module. These texts may also go beyond the scope of this module, but usually include introductory chapters on the basic topics.

When reading these texts it is useful to consider the principles being as well as the details of their application in a particular environment. Also, it is important to recognise that as the environment changes the relative importance of issues may also change.

Other sources of information are also available. For example, in many countries there is an insurance institute of some form. The Chartered Insurance Institute (CII), based in England, provides a range of good educational programs and has links to more than 70 other insurance institutes worldwide (see <u>www.cii.co.uk</u>).

In some cases, supervisory websites are also valuable sources of information. This can be particularly the case when supervisors publish explanatory information explaining their requirements and approaches.



Appendix I: Answers to Exercises

Exercises

- Answer 1 The products listed (automobile, health, property, and life insurance) are available to consumers in almost all jurisdictions. Examples of other consumer insurance products that might be available and subject to consumer protection requirements include liability insurance and motor vehicle assistance plans, although the latter is often exempted from insurance regulation. Review the website of your supervisor, examine legislation and regulations, or consult with colleagues to identify the types of consumer products available in your jurisdiction.
- Answer 2 Examine legislation and regulations or consult with colleagues to determine the requirements for treating claimants in your jurisdiction.
- Answer 3 Examine legislation and regulations or consult with colleagues to determine the requirements for licensing or registration of intermediaries in your jurisdiction.
- Answer 4 Examine legislation and regulations or consult with colleagues to determine the existence of residual market mechanisms in your jurisdiction. When they do exist, the organisations that operate such mechanisms may have websites that provide information on their operations.
- Answer 5 Examine legislation and regulations or consult with colleagues to determine the allowable reasons for cancellation in your jurisdiction. In some jurisdictions, such provisions are set out in legislation that deals specifically with insurance contracts.
- Answer 6 Examine the websites of the supervisor and industry associations in your jurisdiction.
- Answer 7 Consult with colleagues to determine whether to determine whether any fraudulent insurance schemes are currently of concern in your jurisdiction.
- Answer 8 Consult with colleagues to determine the actuarial resources that are available to the supervisor. If the actuarial profession is formally established in your jurisdiction, review the website of the professional organisation for information on the extent of the profession, standards of practice, and so forth.
- Answer 9 Consult with colleagues to determine whether any fraudulent insurance schemes are currently of concern in your jurisdiction.
- Answer 10 Examine legislation and regulations or consult with colleagues to identify any demographic underwriting considerations or rating factors that are not permitted in your jurisdiction.



- Answer 11 Examine the websites of the supervisor, industry associations, consumer protection organisations, and ombudspersons to identify the alternatives available to consumers in your jurisdiction for submitting complaints.
- Answer 12 Examine legislation and regulations, as well as the websites of the supervisor, industry associations, consumer protection organisations, and ombudspersons to identify alternative dispute resolution mechanisms available to consumers in your jurisdiction.
- Answer 13 Consult with colleagues to discuss the circumstances that have most commonly triggered market conduct investigations in your jurisdiction.
- Answer 14 Examine the websites of the supervisor and industry associations in your jurisdiction to identify whether any guarantee funds exist in your jurisdiction. If they do exist, examine legislation and regulations, as well as the websites of the organisations that operate the guarantee funds, to determine how they are administered and funded.
- Answer 15 Consult with colleagues to identify any consumer privacy issues that might currently exist and to discuss the steps taken by most insurers in response to such issues.
 Examine any legislation, regulations, and guidelines that may exist in this area.
- Answer 16 Consult with colleagues to identify forms of distance marketing that are used in your jurisdiction, the products that are marketed in this manner, and the nature of regulatory oversight. Consider whether your supervisor has, for example, staff that are charged with surfing the internet to identify instances in which insurers or intermediaries are marketing insurance over the internet. Examine any legislation, regulations, and guidelines that may exist in this area.
- Answer 17 Consult with colleagues to determine whether any MOUs exist and, if so, their main points.



Core Curriculum for Insurance Supervisors Module 6.1.1 Consumer protections



Core Curriculum for Insurance Supervisors

Module 6.1.1 Consumer protection

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Core Curriculum for Insurance Supervisors

Module 7.1.1 Market analysis

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Using the Core Curriculum

Purpose

The IAIS Insurance Core Principles (ICPs) provide a globally accepted framework for the supervision of the insurance sector. The ICPs are suitable to apply to insurance supervision in all jurisdictions regardless of the level of development or sophistication of the insurance markets and the type of insurance products or services supervised.

The Core Curriculum provides non-commercial training materials to support insurance supervisors as they implement the ICPs. They give insight and background to the ICPs and the concepts underlying them. There is also a focus on the practical application of supervisory concepts.

Supervisory practices are constantly evolving reflecting experience and changing environments. Consequently, Core curriculum materials should not be read as providing 'the answer' to a particular issue, but as providing guidance, approaches and matters to be considered by supervisors when they address specific issues in their own particular context.

Audience

The key users of the Core Curriculum material include:

- Trainers of insurance supervisors
- Individual insurance supervisors, and
- Other parties interested in sound and effective regulatory and supervisory practices.

Link document

The Core Curriculum Link document provides a mapping between the ICPs and the Core Curriculum modules. As ICPs and/or the Core Curriculum modules evolve, their relationship is described by the Link document (see <u>www.iaisweb.org</u>). This allows users to navigate from ICPs to relevant Core Curriculum modules and in the opposite direction.

Learning advice

Different users have different needs and will use the Core Curriculum modules in different ways. The Core Curriculum Learning advice document provides users with suggestions on using Core Curriculum materials to meet a variety of needs. You are recommended to use the Learning advice document (see <u>www.iaisweb.org</u>) to support your use of the Core Curriculum modules.



This module

Summary

The purpose of this Core Curriculum module, 7.1.1, Market analysis, is to outline aspects of market analysis relevant to insurance supervisors with a focus on market conduct topics. Other modules cover financial indicators. It should also be noted that market analysis may vary by jurisdiction according to market structures and constraints.

Learning objectives

When you complete this module, you should be able to:

- 1 List the benefits of market analysis for supervisors, insurers, and market participants, including how market analysis can be used in the supervisory process.
- 2 Describe different measurement categories that are used to assess the nature and performance of a market.
- 3 Illustrate the above categories with examples of specific measures that may be used.
- 4 Describe various sources of information, both domestic and international, that are used for market analysis.
- 5 Explain the strengths and weaknesses of these sources, noting how they can both inform and misinform.
- 6 Describe a process that might be used to identify possible future issues and scenarios.
- 7 Explain the use of trend analysis, noting different techniques that can be employed and describing their strengths and weaknesses.
- 8 Identify the attributes of competitive markets, and describe conditions that tend to induce market entry and exit.
- 9 Explain and discuss the presence of hard and soft markets.
- 10 Describe the sources of market power, and explain how market power might distort market outcomes.
- 11 Given sufficient information, construct a concentration ratio and a Herfindahl Index for a particular market.
- 12 Analyse the availability of insurance in relevant classes and market segments.
- 13 Analyse consumer complaints and investigate market conduct of insurers.



- 14 Describe the types of aggregate market data that might appropriately be published by a supervisor.
- 15 Illustrate situations in which a supervisor might require systematic reporting to monitor and analyse events of importance to financial stability.



1 Introduction

"Market analysis" is a term that can be used to describe a wide range of practices and approaches. Market analysis may be performed by various entities and for significantly different purposes. This module begins by describing the general concept of market analysis. It then focuses on issues important to an insurance supervisor (supervisor). "Supervisor" in this document includes any relevant supervisor in a jurisdiction. In some jurisdictions there may be more than one supervisor. For example, in Australia there are two main bodies the Australian Securities and Investment Commission (ASIC) and the Australian Prudential Regulation Authority (APRA).]

Market analysis is an important tool that supports supervisors fulfilling their mandate. They need to monitor the state of the industry they supervise. This helps them prioritise their actions. The supervisor should review individual insurers (and reinsurers) and it should also actively monitor the "shape" the market. This includes matters such as competitiveness, trends, stability, transparency, and the mutual respect of the market participants and their clients.

Supervisors should monitor and analyse market conduct and financial developments and other environmental factors that may impact insurers and insurance markets and use this information in the supervision of individual insurers. The focus of this module is on market conduct topics. Other modules cover financial indicators. It should also be noted that market analysis may vary by jurisdiction according to market structures and constraints

Market analysis has many links with other topics covered by other modules and the ICPs.

This module is not a simple set of instructions on how to carry out market analysis. Differences across jurisdictions due to legislation, market development, market situation, and other factors make it so that there is no "one size fits all" solution. This module does however provide guidelines for the preparation of market analysis given a particular environment. Supervisors should identify the tools that are available to them and then tailor their use of those tools to fit their own needs and objectives.

This module considers topics such as:

- What should be taken into consideration when preparing market analysis?
- What are the objectives of market analysis?
- What are the subjects of analysis?
- What are the possible sources of information?
- Which indicators can be used?
- What are the tools available for analysis?
- How can the analysis be organised efficiently?



• How does market analysis interact with the supervisor's other activities?

The role of market analysis is discussed in Section 2. This includes the scope and depth of the analysis, as well as the uses of market analysis for the supervisor. The sources of information that can be used for carrying out market analysis are discussed in Section 3.

Changes in the environment affecting the operation of insurers are discussed in section 4. It is impossible to give a universal method to quantitatively assess the impact of changes in the environment on the insurance market. This impact must be evaluated on a case by case method, employing commensurate assumptions and suitable mathematical tools.

Section 5 deals with basic indicators and methods of market analysis. They enable regular quantitative assessment of the structure of the market, its technical results, and its economic position; conduct of companies; market development; and market competition and availability of products; as well as the development of these factors.

Section 6 describes how a supervisor can establish a market analysis function and perform market analysis.

1.1 Terms used

Many of the insurance related terms used in this module are defined in the IAIS Glossary of Terms (see <u>www.iaisweb.org</u>). When additional terms are used they are defined in the text.

The terms regulation and supervision are often used interchangeably, but they mean different things. In this module, regulators establish "the rules of the game," such as regulations and guidelines related to an Insurance Act (or Acts). Supervisors are the "referees" whose role is to oversee that these rules are complied with and deal with the consequences of non-compliance. This requires supervisors to apply judgement when making determinations and decisions. Understanding the difference between the regulators and supervision is important when allocating of responsibilities between regulators and supervisors, especially when they are different agencies.

In this module "supervisor" is used to include both regulators and supervisors. The module also assumes that supervisors are insurance supervisors. Supervisors, as determined by the context of the particular use, may be either the individuals working for a supervisory agency or authority or the authority itself.

While the terms used in this module are suitable for the purposes of this module, it may be that in specific real situations, more detailed definitions or explanations are necessary. These more detailed definitions may also vary between jurisdictions.



Some terms may not have unique meanings, and definitions contained in various sources may differ. To avoid ambiguity and reduce the risk of misuse and misinterpretation, readers should take care to be comfortable they are clear on the definitions of the terms used.



2 Role of market analysis

Market analysis can assess the business development opportunities for new market entrants, including opportunities for profit generation. It can also access market conditions, market stability, fair competition, and consumer protection. This can be particularly useful as a preparation for legislative changes.

For this module, the following definition is used:

Market analysis is research carried out to understand the current state of a market and help predict its future.

This concise definition could seem too simple; however, the importance of prediction should be highlighted. Prediction of future market behaviour (and behaviour of its individual participants) helps supervisors anticipate unfavourable developments and be prepared to intervene in case of a threat to market stability or consumers' interests.

This definition implies that:

- Market analysis is *not only* the description and analysis of the past (the goal of insurance supervision is informed action, not just knowledge for its own sake!)
- Market analysis is not a one-off process, and
- Market analysis is a systematic, repeatedly performed activity of collecting market information, putting the information into context, evaluating trends, and taking appropriate action.

Market analysis must be both:

- Proactive (studying and analysing trends during "normal" development, in order to help predict the future and inform supervisory actions), and
- Reactive (studying the impact of extraordinary market events, such as large natural catastrophes or failures of companies on the whole market, in order to better predict and manage such events in the future).

2.1 Market analysis in the context of the ICPs

The following concept of market analysis is covered in the ICPs:

Supervisors should monitor and analyse market and financial developments and other environmental factors that may impact insurers and insurance markets and use this information in the supervision of individual insurers.

Some criteria to help the supervisor check and evaluate the level of implementation of market analysis, together with basic comments and explanations, are listed below.



2.1.1 Regular market analysis

Supervisors need to have processes in place to conduct regular market analyses. This enables the supervisor to be aware of material changes in market conditions that may impact individual insurers, the whole insurance sector, and other financial sectors.

Supervision should promote the maintenance of a fair, safe and stable insurance sector for the benefit and protection of policyholders. Some risks that could undermine the achievement of this objective include:

- Jeopardized financial soundness of an insurer
- Poor conduct by an insurer when serving policyholders, particularly in claims handling
- Unavailability of products
- Unfair competition and misuse of market power, and
- Changes in the market environment.

Market analysis can help the supervisor predict the unfavourable development of the above risks, and therefore facilitate an adequate and timely response.

2.1.2 Market analysis: past, present and future

Supervisors, in performing market analysis, consider not only past developments and the present situation, but also trends, potential risks and plausible unfavourable future scenarios. They also consider capacity to take action at an early stage, if required.

Correct and efficient performance of market analysis requires timely delivery of well defined, reliable, and accurate data; understandable and unambiguous definition of analysed factors and indicators; and stable analytic methods. When interpreting the results of market analysis, risk tolerance limits (limits and thresholds representing "warning level" and/or "action level") must be defined. All of these issues are dealt with in a greater detail in the following sections.

2.1.3 Market analysis: quantitative and qualitative

The ICPs indicate the supervisor should perform both quantitative and qualitative analysis and make use of both public and other sources of information, including horizontal reviews of insurers and relevant data aggregation.

Market development is always a result of the impacts of many different factors. While the results usually are measurable and can be expressed in quantitative form, quite frequently, the origin of the changes is non-measurable and difficult to assess (for example, legislative changes).



To the extent that a jurisdiction is observing certain ICPs, accessibility of data should not be an issue. To illustrate:

- For details on insurers' public disclosure of data, see the ICP covering information disclosure and transparency toward the market, and.
- Reasonable data of any kind (including confidential information) can be requested by the supervisor from an insurer (see ICPs covering reporting to supervisors, offsite monitoring and on-site inspections).

More difficult to determine is what is a *reasonable amount and structure of data* and what is the *availability* of data. In particular, data that are newly requested from insurers, (such as complaints files and complaints statistics) may not necessarily be immediately available in a uniform structure and level of detail. Effective market analysis can be facilitated with a database that

- Has a stable and efficient structure (that is, does not require frequent structural changes and enables preparation of all necessary analyses)
- Does not impose an excessive burden on insurers when they are preparing the data (that is, requires data that the insurers are able to provide and that they can/should use also for themselves, for example, while performing risk management)
- Does not duplicate activities of other data collectors and providers (the supervisor should maintain extensive and intensive communication and cooperation with other institutions operating in this area)
- Is internationally compatible (that is, enables comparison with other markets, at least on regional level) and enables cooperation with other domestic financial supervisors and foreign supervisors, and
- Brings fast and efficient results (to enable prompt supervisory intervention as requested in the ICP on Preventive and Corrective Measures).

Quantitative and qualitative analysis reinforce and clarify each other. Quantitative analysis deals with indicators that can be expressed in figures. Qualitative analysis explains market changes and developments in words. Qualitative analysis includes reporting on general developments that may impact insurance markets, companies, and clients, including new or forthcoming financial sector and other relevant legislation, developments in supervisory practices and approaches, and reasons for market exits. Qualitative analysis should always be complemented with a quantitative analysis. The explanation or prediction of development is never complete without quantitative assessment of impacts. In the same way, quantitative analysis also needs its qualitative complement. Each table, figure, or any other form of



presentation of quantitative analytical results must be complemented with a verbal explanation of

- Reasons for the presented development
- Possible inaccuracies that may influence the results
- Expected future development trends, and
- Relevant comments and remarks of any other kind.

Otherwise, the presentation loses a significant part of its analytic value.

2.1.4 Market analysis: market wide reporting

Supervisor should require insurers to disclose relevant, comprehensive and adequate information on a timely basis in order to give policyholders and market participants a clear view of their business activities, performance and financial position. This is expected to enhance market discipline and understanding of the risks to which an insurer is exposed and the manner in which those risks are managed. Consequently, supervisors should make sufficiently detailed aggregated market data publicly available.

Market data is important for insurers and other market players, enabling them to compare their performance and activities.

2.1.5 Market analysis: systematic reporting

Supervisor should establish documented requirements for the submission of regular qualitative and quantitative information on a timely basis from all insurers licensed in its jurisdiction.

In addition to standard, regular reporting and public disclosures, specific data collection and analysis may be needed in the case of, for example, catastrophes that may influence the market. The terrorist attack at the World Trade Center in New York on September 11, 2001 and periodic windstorms affecting North America, the Caribbean and Asia may be cited as instances of human-made and natural catastrophes, respectively. Supervisors should be prepared to (re)act immediately to secure the maximum possible consumer protection. Exposure to such events should be monitored by the supervisor because they constitute a potential systemic threat, and will influence how the supervisor monitors financial strength and liquidity. The ICPs state the supervisor should require more frequent and/or more detailed additional information on a timely basis whenever there is a need.



2.1.6 Market analysis: regional and international

The ICPs state that insofar as international relationships affect internal insurance and financial markets, the analysis is not limited to domestic markets, but includes also regional and /or global developments.

The ICPs also state the supervisor should cooperate and coordinate with other relevant supervisors and authorities including those across borders.

International relationships and cooperation have become an inevitable part of today's life, also for insurance and its supervision. Sometimes, the need for cooperation is directly embedded in the applicable legislation, and the supervisor would not be able to perform its duties without analysing other markets. Obviously, cross-border market analysis is difficult to perform. Let us briefly take the situation in the European Union. EU member countries have adopted two tiered legislation:

- Common EU legislation obligatory for all member states, and
- Individual state laws that may not contradict the common EU legislation.

The EU legislation enables:

- Single-licence principle (license to operate issued in one member state is also valid in other member states)
- Freedom to provide services (insurers may operate from one member state and in other member states), and
- Right of establishment (insurers may establish branches in other member states).

It is thus not surprising that international cooperation in such a market environment is not only vital but even obligatory (regulated by the EU laws).

Therefore, cooperation and market analysis information exchange between individual national supervisors is inevitable. Some of the market analysis indicators mentioned in this module serve the comparison of individual markets (see section 5: Analysing Market Developmental Level).

2.1.7 Market analysis: macroeconomic vulnerabilities and financial market risks.

The ICPs require the supervisor to assess the extent to which macro-economic vulnerabilities and financial market risks impinge on prudential safeguards or the financial stability of the insurance sector.

Basic information on market analysis has been discussed above. There are a number of related topics not covered or covered only partially due to the limited scope of this module, such as:

• Impact of trading and ownership links to market structure and its operation



- Insurance groups and financial conglomerates aspects of market analysis
- Non-traditional reinsurance, and
- Analysis of external markets and their impact to domestic market.

The world is changing and supervisors must keep pace with all relevant changes. Therefore, continuous observing of and learning about the market changes form inevitable parts of the supervisor's job.

2.2 Use of market analysis and benefits for the supervisor

Modern supervisory techniques must include market analysis. The following discussion addresses the most important specific areas in which market analysis contributes to the execution of insurance supervision. This section deals with the general benefits and contributions that market analysis can provide the supervisor.

It is impossible to avoid totally all adverse developments. On the other hand, watching the trends and analysing the strengths and vulnerabilities of the market *enable supervisors to be proactive, to put them at the ready and poised to (re)act before minor problems become major by adapting techniques as market conditions evolve.*

2.2.1 Market benchmarks

Information related to individual market participants can be summarized and combined into market values, then analysed to establish market benchmarks and averages. These benchmarks can then be used to identify any significant differences between the benchmarks and the positions of individual companies for prudential and market conduct purposes. Deviations from such benchmarks may trigger more intensive monitoring or intervention.

Generally, in a sound market, companies close to the market average that keep pace with market benchmarks are less likely to have problems than insurers that deviate from the market in a negative direction.

2.2.2 Market efficiency

Market analysis *enables the measurement of competition in the market*. The market is efficient if products are available and sold at reasonable prices. It has been proven many times both in economic theory and in practice that efficiency can be achieved more easily in markets that have sufficient competition and the size of individual players is not great enough to enable them to misuse their market power.

For details see section 5 regarding analysing market structure and competition.



2.2.3 Insurance supervision efficiency

Not only the market but also the insurance supervision itself should be efficient. Here, market analysis can contribute a great deal. Efficiency of the supervisor means that:

- The supervisor acts in a timely manner, and
- The supervisor acts efficiently.

Analysis helps to set priorities within the supervisory process. Supervisors may need to pay more attention to certain insurers under adverse circumstances and/or in cases in which policyholders' rights could be endangered. The manner in which a supervisor can organise closer supervision of "suspect" insurers in a transparent way, without breaching principles of equality, is discussed in other CC modules and the ICPs. However, some considerations on setting priorities and concentrating capacities in the supervisory process are mentioned here.

There are several reasons to watch some market players more closely. The most important reasons include, for:

- Larger insurers:
 - They could misuse their market power when pricing and serving their clients, and
 - More clients could face difficulties in case of the adverse development of the company.
- Smaller insurers:
 - They are often more sensitive to market fluctuations, and
 - Due to their size, it is more difficult for them to keep their fixed costs at an appropriate level and keep pace with their competitors.
- Insurers that deviate significantly from the market average in main indicators (such as provisioning level, combined ratio, solvency margin):
 - Such deviations could indicate adverse development of the company, nonprofessional approach, or poor financial position compared to market benchmarks.

Market analysis helps to concentrate the supervisor's capacities on insurers that are more likely to have problems.

2.2.4 Market conduct

Compared to measuring purely economic indicators, it is more difficult to measure and analyse the behaviour of the market and individual companies. Desirable behaviour includes fair and transparent marketing of insurance products, timely response and settlement of claims,



resolving complaints, and complying with the requirements of public disclosure. Basic possibilities for such analysis are discussed in section 5.

Monitoring the market conduct of insurers is another way that market analysis protects policyholders.

2.2.5 Comparison of individual markets and cooperation with other supervisors

Some of the market analysis criteria enable the comparison of the level of development of individual markets (see section 5 regarding analysing market developmental level for details). Using equal or comparable market analysis in different market enables the supervisor to compare the market status of individual insurers in different markets. Comparable market analysis also facilitates cooperation with other supervisors, which is vital for cross-border cooperation in an international environment such as the European Union (applying the principles of right of establishment, freedom to provide services, and single license). Additional details and considerations regarding such cooperation can be found in the ICPs and have been referred to above.

2.3 Scope and depth of market analysis

Requirements for market analysis can be contradictory.

- Market analysis should be comprehensive, taking into account all factors affecting (or potentially affecting) the market and its development and performing quantitative measurement of such impact (or at least its estimation when quantification is impossible or appropriate mathematical methods are not available), and
- If such impact could lead to an adverse development endangering the consumers, market, or some of its participants, the analysis should identify decisive factors and suggest their alternative values (in case of quantitative factors) or qualities (in case of qualitative factors) that are achievable and would lead to a more favourable development.

On the other hand, the analysis should:

- Be reasonably priced
- Require reasonable capacities in terms of expertise and technological resources, and
- Be fast enough to enable taking measures against adverse development. It is necessary to establish the scope and depth of the analysis to comply as much as possible with the above requirements.



The following aspects and methods should be considered when setting the sensitivity:

- Learning by experience:
 - Is the market analysis sensitive enough to identify adverse development and negative events affecting the market in the past?
 - Would the signals brought by the market analysis come early enough to enable timely measures?
- Cooperation and exchange of information. The supervisor should cooperate and exchange information with:
 - Authorities supervising other areas of the financial market, and
 - Supervisors of other insurance markets.
- Adequacy regarding prudential requirements:
 - Is the market analysis sensitive enough to judge the prudential requirements and development of values of their indicators on the market-wide level?
 - Would the signals brought by the market analysis come early enough to enable timely measures?

The scope and sensitivity of market analysis must be continuously followed and assessed, and market developments must be reflected without delay.



3 Sources of information

The majority of the information needed for direct quantitative market analysis is supplied by insurers, as both reports to supervisors and findings during onsite inspections. However, a substantial portion of information useful for the analysis and its environment also can be obtained from other sources. The supervisor should look for opportunities to enhance its knowledge and helps to assess future market development.

Internal communication and information sharing within the supervisor have a particularly important role. Information from regular reporting, offsite monitoring, and onsite inspections should reach the department responsible for market analysis without unnecessary delay. Timeliness for all internal communication within the supervisor can help ensure that information is passed on expediently.

The market analysis staff should monitor relevant publications, press releases, market surveys, investigation reports, and discussion groups, both domestically and internationally, and extract information on issues that could affect the insurance sector. This monitoring can also be done using electronic tools and services (at least in some territories in which such tools are available and legal). Monitoring is not restricted only to items with "pure insurance content" but also to items that relate to insurance relatively loosely, such as demographic development, criminality, and exchange rates.

3.1 Insurance market participants

Market participants and their possible contributions to market analysis are listed below:

• Insurers and insurance associations

Supervisors can meet formally and informally with insurer management and directors. These meetings can take place as part of onsite inspections or separately. Meetings also can also be held more formally, for example, through periodic meetings of senior management of the supervisor with industry counterparts. Mutual exchanges of views will improve communication, understanding, and trust; and complement information collected through other channels.

Insurance associations usually also perform market analyses, prepare comprehensive market statistics and investigate the overall market environment. They may also prepare other outputs such as codes of conduct for member companies. Results of these activities are communicated in their annual reports, press releases, and other outputs; and may be useful and contribute to the analysis performed by the supervisor. Regular discussions with the top association representatives (who usually are senior management members of insurers) can



contribute to estimating and understanding future market development, problems faced by the insurers, their solutions, and other issues.

• Reinsurers

Reinsurers perform global market analyses as well as analyses of individual events affecting the international insurance and reinsurance market. Their contributions are particularly valuable because of the global perspective of their approaches. It may be useful for the supervisor to keep in contact periodically with reinsurers and study the materials they issue.

• Insurance and reinsurance brokers

The same statements above about reinsurers also are valid for large insurance and reinsurance brokers. In addition, in their efforts to attract consumers, to some extent they compete with rating agencies with respect to assessing the financial stability of reinsurers and finding methods for using the results of such assessments in their work. Their output may serve as an inspiration and comparison tool for the supervisor.

- **Other professionals** in the insurance sector, including:
 - Actuaries and their professional associations
 - Risk managers
 - Compliance officers
 - Advisors
 - Credit rating agencies
 - Insurance business analysts, and
 - Professional services companies that work in the insurance sector.

Furthermore, the supervisor can discuss with them particular technical issues as well as what they see as developing risks and business trends.

3.2 Wider economic and international environment

Regular discussions with a variety of other parties may be particularly useful for sharing views on developments and trends affecting the financial sector and legal environment.

• Authorities supervising other financial sectors

Meetings can be useful even if the counterparty is legally constrained from sharing information about specific financial institutions.



• *Representatives of other organisations having roles in the financial markets*

These officials include central bankers, finance ministers, and managers of policyholder protection funds.

• Auditors and credit rating agencies

These entities have two common interests: investigating the soundness of market players and protecting the market from adverse developments. Therefore, these meetings should be held frequently.

• Supervisors of other jurisdictions

These entities have two common interests: investigating the soundness of market players and protecting the market from adverse developments. Therefore, these meetings should be performed frequently.

• International institutions

Such institutions include IAIS (International Association of Supervisors), EIOPA (Committee of European Insurance and Occupational Pensions Authority), Insurance Europe), and IASB (International Accounting Standards Board). The supervisor has a natural interest in following the developments and participating in activities of these institutions whenever possible.



4 Changes in the market environment

The environment in which the market operates is determined by the existing political systems, economic and financial contexts, legislation, developmental level of the jurisdiction, geographical location (climate), and the society. Political changes may trigger changes in each of these factors. The development in Eastern European jurisdictions may serve as a good example. In the early 1980s, these jurisdictions had state monopoly planning systems (with monopolies also in the insurance sector). At present, they are European Union members, and all aspects of life in these jurisdictions have changed, including not only legislation, economy, finance, and demographics but also areas seemingly unimportant to the insurance industry such as infrastructure and transportation.

It is not only the financial impact that should be considered but also the availability of reasonable and adequate insurance protection for consumers. When preparing the market analysis, the supervisor should always consider the particularities of the market. The influence of individual factors is different in different markets. (Furthermore, it is possible that some of the market-specific factors are not mentioned in this module).

4.1 General economic conditions and financial market situation

Any changes should be carefully followed by the supervisor:

- If the general economic situation is deteriorating (whatever the cause), it may negatively affect the disposable income of inhabitants, decrease the demand for insurance products, and shrink the insurance market, which may affect the viability of insurers,
- Surprisingly, improvement of the general economic situation (or even a stabilization of the economy) also may bring problems to insurers. In such an economic environment, interest rates go down so that reaching the yields guaranteed in fixed-interest-rate life policies may be difficult, and
- Negative development in the equity market has a negative impact on the value of insurance provisions and reserves invested in equities (and thus to the solvency of insurers).

In general, the three points above are valid not only for equities but for all possible types of investments of provisions and reserves. This is why the investment concentration of insurer portfolios is regulated: deterioration in one sector may be balanced by improvement in another. Investment risk, particularly in life insurance, should be as low as possible and thus subject to (reasonable) regulation.



Underestimation of changes and inadequately slow adaptation to new environments can significantly harm the insurance market. For instance, they were the main reason for the failures of Equitable, a British life insurer (see The Treasury Committee 2001) and Mannheimer Lebensversicherung AG, a Germany life insurer. The later was the first failure of a life insurer in Germany in more than 50 years. These failures triggered large discussions in the EU as to whether they could have been anticipated by their home supervisors through adequate market analyses and prevented by (or amended) prudential requirements; and whether sufficient measures could have been imposed under the circumstances existing prior to these failures. Consequences can be found even on the EU level. The European Commission introduced an initiative on the establishment of insurance guarantee schemes to enhance consumer protection.

4.2 Legislation

Legislation not only establishes the framework for insurance market operation but also highly influences its performance and results. The examples below are only a partial list of some of the legislative changes affecting the insurance market. The supervisor should follow the development and changes in legislation as a whole, and for each change analyse the impact on the market.

• Taxation

- Taxation levels and/or changes can widely influence demand, particularly for life insurance products
- Taxation changes can significantly influence the cost of claims, and
- Taxation changes can also influence the price of insurance (i.e. the premium).

• Claims indemnity

- Indemnity amounts for claims can change significantly over time due to changes in legislation as well as to changes in legal findings (usually, "change" means "increase"), and
- New sources of indemnity unknown earlier in national legislation may be introduced in the legislative development process. Examples are pain and suffering awards for relatives of victims of traffic accident and punitive damages.

• Traffic rules

Introducing or changing speed limits, and how strictly the police enforce traffic laws, influence the frequency and severity of automobile accidents and, consequently, paid claims. Even positive changes may have temporarily negative effects. For example, after the introduction of strict right of way for pedestrians on



zebra crossings in the Czech Republic, the frequency of accidents on zebra crossings increased by 400%! Pedestrians' right of way was relatively ambiguous earlier, so the changes was undoubtedly correct and a standard development. Nevertheless, after the new legislation, pedestrians became too careless, while some drivers still do not fully observe the new rules. It will take some time to reap the benefits of the changes. Until then, people will be injured or killed, and the accident claims will burden the motor third-party liability insurers.

• Various liability fields

Some types of claims that were not payable earlier may become payable under new legislation or a legal situation. This includes, for example, legislation that introduces minimum levels of cover that the insurer is required to provide in a particular insurance sector.

In this respect, it is not only local legislation and developments that should be considered but also those in international law.

4.3 Society

The influence of societal factors should be included in the market analysis prepared by the supervisor. Some examples are provided below.

- Demographic trends:
 - A decrease in population may imply decrease in demand for insurance products and thus affect viability of some companies in the market
 - The changing structure of population may lead to changes in the product mix in the market. For instance, an aging population will imply increasing demand for pension products, and
 - An increase in population density or population displacements, such as to coastal areas, can accelerate the process of value concentration. This factor should not be underestimated in market analysis.
- Developmental level of the society:
 - The frequency and severity of insured events of a particular kind (terrorist attacks, road accidents) that influence the market and its development depend significantly on the general developmental level and other issues in the society, and
 - Increasing life expectancy, which is also closely linked with the developmental level of the society, may significantly impact the market, particularly on the life insurers that underestimated such development.



4.4 Jurisdiction's developmental level

A jurisdiction's wealth and its development also influence the insurance market:

- Improving infrastructure (road system), changing age, number of vehicles, and structure of the fleet has a significant impact on motor insurance in both directions:
 - Improving safety of cars diminishes consequences of accidents, and
 - Their higher value increases cost of repair.
- Improving medical care means that victims survive accidents that would have been fatal in the past. From the social point of view, this is definitely a positive development, but the consequences for the insurance industry are:
 - Increasing cost of medical treatment, and
 - Increasing cost of loss of income after accident, caused by both higher life expectancy and higher income level.
- Improving material wealth:
 - Leads to higher value concentration and thus higher loss susceptibility in case of catastrophic events
 - Positively affects life expectancy, which decreases the frequency of life insurance claims, but also leads to the purchase of larger value life insurance policies
 - Increases the demand for savings and investment products, and
 - Increases traffic density and thus also the number of road accidents.

All these factors must be carefully observed both in the risk management of individual companies and in market analyses performed by the supervisors.

4.5 Geographical location and climate

Demand for insurance cover and insurance market operation may be significantly affected by local geographical and climatic conditions. Some natural perils in some geographical areas are almost uninsurable (e.g. high flood risk areas). State (legislative) intervention may improve the availability of protection. It is obvious that market analysis must be concerned with such issues and concentrate particularly on local problems. Global trends, such as what is referred to global warming, should be considered along with its potential impacts on the market.



5 Market analysis tools and methods

To a great extent, market analysis means risk analysis of summarized data collected from individual insurers. Therefore, the analytic methods and considerations applied to risks discussed in the CC modules and ICPs on risk assessment and risk management can be applied. Tools and considerations introduced in this module may overlap and/or be further developed with tools and considerations presented in other Core curriculum modules.

Usually, the basic data (gross premium written, absolute amount of provisions) collected from insurers and other sources are not suitable for market-wide analysis. When this data is combined into ratios, processed through mathematical formulas, monitored for development over time, and summarised with conclusions, it becomes more useful for market analysis. It can then be discussed with other entities in the market and broader environment to facilitate a deeper understanding of market development, assess its strengths and vulnerabilities, and forecast the future.

The extent and level of this module does not allow the introduction of sophisticated market analysis indicators and methods; therefore, only basic ones have been included here. References to sources of more extensive or advanced information are mentioned when necessary or useful.

Subsections dealing with individual indicators or groups of indicators have been structured as follows:

- Introductory comments on the purpose of the indicator(s), main fields of use, and benefits for the supervisor
- Definition, scope of use
- Remarks on how to interpret values of the indicator, how to indicate adverse developments, and what should be the supervisory action in such a case, and
- Example or case (sometimes a combined example, or case study, for multiple indicators).

5.1 Analysing market structure and competition

Market analysis indicators discussed in this subsection enable the assessment of the level of competition in the market and the development of competition over time. They also enable comparison with other markets. As regards their possible use in the supervisory process, they have a relatively less important role. These indicators help in assessing the market power of market participants. They also may have practical use for the supervisor when considering approval of mergers and acquisitions: mergers and acquisitions should not reduce the competitiveness of the market. On the other hand, in case of exit from the market and/or



portfolio transfers, more important reasons will probably play a decisive role in the supervisor's decision making.

Market shares of insurance groups, as well as the shares of individual companies, can be analysed and the results compared. The supervisor can use whichever measures is more practical for the particular situation.

Other aspects of market structure that ca also be analysed include the following:

- What is the number of insurers operating in a market (and its development over time)?
- What is the number of-and, particularly, the reasons for-market exits (and development over time)?
- What is the market structure with respect to domestic and foreign insurers, and branches?
- To what extent are insurers part of banking conglomerates or vice versa?
- What is the level of ceded reinsurance? How much of this is cross-border? How concentrated is the reinsurance ceded (e.g. is the market concentrating its cessions to a limited number of reinsurers)?
- Are there any other significant linkages between the insurance market and other financial sectors (e.g. share of the insurance market asset portfolio made up of banks' securities)?

5.2 Concentration ratio

Concentration Ratio: The percentage of market share owned by the largest m companies, where m is a specified number of companies (usually 4 or 8).

The concentration ratio is often expressed as CR_m ; for example, CR_4 .

The concentration ratio can be expressed as:

$$CR_m = s_1 + s_2 + s_3 + \dots + s_m$$

where s_i = market share of the i^{th} company.

The lower the concentration ratio, the more widespread–and usually, the better–the competition in the market. Competition has four aspects, defined as:

- Perfect competition—very low concentration ratio
- Monopolistic competition—concentration ratio below 40 percent for the 4firm measurement



- Oligopoly—concentration ratio above 40 percent for the 4firm measurement
- Monopoly—near to 100 percent concentration ratio for the 4firm measurement.

The competition in the insurance sector will probably never be so fierce, crowded, and "perfect" in the sense of concentration ratio as it is in, for example, agriculture. The supervisor should, however, take into account the particular market situation. In oligopoly, for instance, the market is dominated by a small number of sellers, and each oligopolistic is aware of the actions of the others. Oligopolies have a significantly higher risk of misusing their market power (particularly by dictating prices), to the detriment of consumers.

In addition, comparing market share information over time allows supervisors to identify companies whose operations are expanding or contracting and to inquire further into reasons for the change and whether the company has resources to deal effectively with growth or loss in business.

5.3 Herfindahl Index

The Herfindahl Index provides a more complete picture of market concentration than does the concentration ratio. This index uses the market shares of all companies in the market. It squares these market shares to place more weight on the larger companies. If there are n companies in the market, the Herfindahl Index can be expressed as:

$$HI = s_1^2 + s_2^2 + s_3^2 + \dots + s_n^2$$

where s_i = market share of the i^{th} company.

Unlike the concentration ratio, the HI will change if there is a shift in market share among the larger companies.

The Herfindahl Index can be used to determine whether mergers are equitable to society and thus also influence the actions and decision-making processes of the supervisor. In the United States, for example, increases of over 100 points generally provoke scrutiny, although it may vary case to case. The Department of Justice considers Herfindahl Indices between 1000 and 1800 moderately concentrated and indices above 1800 concentrated. As the market concentration increases, competition and efficiency may decrease, and the opportunities for collusion and monopoly increase.

The Herfindahl Index should be examined not only with respect to the total market share but also to market share of individual products (that is, in the insurance sector for individual lines of business).



5.4 Example 1

As an illustration, we will calculate the Herfindahl index for a fictitious market, which we will name Frentovania. There are 4 insurers in the market, and they have, respectively, market shares of 10, 20, 30, and 40 percent of the market. The HI is calculated as follows:

 $HI = (.10)^{2} + (.20)^{2} + (.30)^{2} + (.40)^{2} =$

5.5 Example 2

Tables 1 and 2 and figures 1 and 2 show the development of concentration and Herfindahl Indices of the Czech insurance market after the political changes in Central and Eastern Europe. (During the era before 1991, "market" was not market–monopoly of the only insurer was guaranteed by law.)

The figures show steady development interrupted only in 1998, when the company Kooperativa merged with its "sister" Msl. Kooperativa. The development has been slowing down since the year 2000.³¹ Shares of companies used to calculate the concentration ratio are shaded. Tables are sorted in descending order by market shares in 2003. For conversion of market volume into US dollars, the current approximate exchange rate is 1 US\$ = 25 CZK (Czech Crown).

Czech Insurance Market	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Ceska polistovna	14 400 000	15 887 305	20 389 912	22 150 679	23 491 068	25 933 224	28 761 797	32 508 977	33 076 635	26 910 331	31 035 286	33 279 987	37 875 096
Kooperativa			1 462 187	2 681 674	3 175 803	3 901 646	4 585 607	6 813 654	7 565 277	11 991 077	13 569 601	16 369 034	20 023 849
Allianz			43 419	274 380	744 581	1 566 453	2 159 961	2 633 487	3 238 899	6 252 941	7 287 378	7 707 692	8 747 269
Pojistovna CS			81 052	428 172	713 758	941 837	1 318 187	1 770 536	2 168 881	3 021 868	3 659 840	6 281 657	6 937 473
CSOB pojistovna		7 151	57 367	515 926	1 049 200	1 561 138	2 253 151	3 224 683	5 974 662	6 153 284	5 506 760	5 525 119	6 027 381
ING		49 913	321 879	782 987	1 313 884	1 839 320	2 380 530	2 850 604	3 535 463	4 018 863	4 227 120	4 808 887	5 030 076
Generali			160	11 551	116 904	426 750	843 781	1 086 956	1 302 197	1 743 778	2 101 003	2 724 045	4 625 490
Komercni pojistovna					276	5 079	22 890	140 788	462 259	1 923 148	2 580 393	2 349 195	3 232 525
СРР					35	15 505	43 253	129 541	225 663	834 546	1 365 862	2 082 446	3 035 875
UNICA			4 221	66 644	157 851	310 877	508 842	679 860	942 883	1 258 485	1 455 162	1 795 879	2 454 191
AMCICO AIG LIFE			69 091	228 322	359 718	468 856	681 491	780 508	937 415	1 198 988	1 576 262	1 381 166	1 722 736
Credit Suisse				0	344	52 628	135 534	306 492	566 327	872 967	1 044 148	1 098 709	1 255 910
Chmelarska				0	155	10 329	51 422	118 081	177 997	290 043	455 242	646 829	
AIG Czech Republic								0	0	0	53 505	595 518	841 842
EGAP		151	66 920	196 185	126 633	296 188	744 713	456 365	793 233	1 074 080	1 282 503	452 451	405 631
Aviva						0	107	16 526	98 015	198 125	270 474	343 888	383 239
Gerling				53 925	98 056	123 639	147 166	180 554	244 972	294 781	318 887	300 115	211 093
Union				0	e	81 591	132 750	124 202	111 454	93 029	120 849	249 450	456 312
Hasicska		45	12 316	65 255	112 224	139 527	176 455	221 170	239 250	227 327	208 635	236 110	296 837
CP Zdravi			187	36 182	46 875	83 172	107 007	137 952	146 887	174 056	190 430	197 749	190 708
Wustenrot						0	0	0	7 794	53 572	103 818	189 046	240 255
Cardif Pro Vita						0	4	1 705	14 082	51 353	65 074	100 991	380 374
Victoria Volksbanken				60	5 761	20 236	34 035	68 501	95 601	125 435	163 616	159 147	198 721
D.A.S.				0	4 833	22 389	39 060	52 995	84 060	102 232	122 332	144 116	160 745
Euler Hermes						0	33	24 589	53 119	86 749	110 890	103 549	120 229
Evropska cestovni			236	42 563	80 517	116 100	68 710	93 617	63 893	77 231	92 959	94 739	141 471
Slavia				5 772	23 048	40 028	44 702	46 656	55 830	59 591	42 248	43 916	54 635
Gothaer			832	3 008	8 283	11610	17 347	24 154	13.538	22.076	27 534	30 784	39.338
Kravad			20	0	152	1 279	4 450	9 368	12 197	13 984	31 728	44 393	9 348
Czech Insurers Bureau							C	C	C	5 863	3 853	3 054	2,916
Maxima				0	4 844	41 997	95 438	162 337	151 295	65 461	65 367	1 109	25 666
Certusia				0	3 729	12 716	39 559	75 637	81 606	88 215	58 610		
CP Direct						0	0	0	499	1 075	466		
Patria				•	5 474	31 195	45 111	56 795	23 934	0	0		
Msl. Kooperativa		227 734	749 909	1 171 612	1 498 625	1 592 917	1 852 562						
Morava			18 213	279 195	378 834	344 662	320 775						
Otcina pojistovna		14 552	52 584	88 274	41 821								
Austria Coll.				332	3 579	5 702							
Zurich					16 731	33 507					1 061 067	994 983	
Adria Way											13 473	10 338	13 340
ARAG												211	2 204
Halali											9 181	10 214	20 202
HDI											33 054	34 074	158 204
Nationale Nederlanden											23 257	24 424	24 298
Servisni											26 086	32 857	70 282
Triglav											3 526	22 433	97 980
Vitalitas													19 283
VZP											377 266	338 669	347 426
Winterthur												56 342	65 422
not allocated	1 100 000	633 913	65 874	20 000 101	148 361	210 997	369 870	291 050	620 346	1 304 792	0	0	0
Market total	14 400 000	16 820 764	23 396 359	29 U88 424	33 731 96U	40 243 094	47 986 301	55 U88 340	63 086 153	70 589 346	80 744 745	90 865 305	105 945 872

Table 1. Premiums of insurers in the Czech market



Module 7.1.1 Market analysis
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Presh more Maded	1001	1000	4000	1001	1005	4006	4007	1000	1000	0000	1000	0000	0000
	1991	7881	0001	100	CRRI	0881	1991	000	1999	2000	1007	2002	2002
Ceska pojistovna	100.00	94.45	87.15	76.15	69.64	64.44	59.94	59.01	52.43	38.12	38.44	36.63	35.75
Kooperativa	00.0	00.0	6.25	9.22	9.41	9.70	9.56	12.37	11.99	16.99	16.81	18.01	18.90
Allianz	0.00	0.00	0.19	0.94	2.21	3.89	4.50	4.78	5.13	8.86	9.03	8.48	8.26
Pojistovna CS	0.00	0.00	0.35	1.47	2.12	2.34	2.75	3.21	3.44	4.28	4.53	6.91	6.55
CSOB pojistovna	0.00	0.04	0.25	1.77	3.11	3.88	4.70	5.85	9.47	8.72	6.82	6.08	5.69
ING	0.00	0.30	1.38	2.69	3.90	4.57	4.96	5.17	5.60	5.69	5.24	5.29	4.75
Generali Kommai mintering	0.00	0.00	0.0	0.04	69.0 0	1.05	1./6	19.1	2.06	2.4/	7.60	3.00	4.3/ 2.0E
	0.0	0.0	0.0	000	0.00	0.0	000	70.0	2.0	4 TO F	0.60	0000	0.00
	0.0	0.0	0.0	0.00	0.0	10.04	90.0	4 2.0	0.00	0.1	00-1 V0 1	1 00	10.2
	0.00	0.00		0.23	1 0.4/	1.17	0.1	1.23	74.	1./0	1.00	1.30	2.32
AMCICU ANG LITE	0.00	0.00	0.30	0.78	10.1	1.1/	1.42	1.42	1.45 0.00	0/-1	1.90	707	1.63
Credit Suisse	0.00	0.00	0.00	0.00	0.00	0.13	0.20	0G'D	0.90	1.24	1.23	121	1.18
AIG Czech Kepublic	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.0/	0.66	0./9
Union	0.00	0.00	0.00	0.00	0.00	0.20	0.28	0.23	0.18	0.13	0.15	0.27	0.43
EGAP	0.00	0.00	0.29	0.67	0.38	0.74	1.55	0.83	1.26	1.52	1.59	0.50	0.38
Aviva	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.16	0.28	0.33	0.38	0.36
Cardif Pro Vita	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.07	0.08	0.11	0.36
VZP	0.00	0.00	0.00	0.00	00.00	0.00	0.00	0.00	0.00	0.00	0.47	0.37	0.33
Hasicska	0.00	0.00	0.05	0.22	0.33	0.35	0.37	0.40	0.38	0.32	0.26	0.26	0.28
Wustenrot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.08	0.13	0.21	0.23
Gerling	00.0	00.0	0.00	0.19	0.29	0.31	0.31	0.33	0.39	0.42	0.39	0.33	0.20
Victoria Volksbanken	0.00	0.00	0.00	0.00	0.02	0.05	0.07	0.12	0.15	0.18	0.20	0.18	0.19
CP Zdravi	00.0	00.0	0.00	0.12	0.14	0.21	0.22	0.25	0.23	0.25	0.24	0.22	0.18
D.A.S.	00.0	00.0	0.00	0.00	0.01	0.06	0.08	0.10	0.13	0.14	0.15	0.16	0.15
IDH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.15
Evropska cestovni	00.0	00.0	0.00	0.15	0.24	0.29	0.14	0.17	0.10	0.11	0.12	0.10	0.13
Euler Hermes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.08	0.12	0.14	0.11	0.11
Triglav	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.09
Servisni	0.00	00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.04	0.07
Winterthur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	00.0	0.00	0.00	0.00	90.06	0.06
Slavia	0.00	0.00	0.00	0.02	0.07	0.10	0.09	0.08	0.09	0.08	0.05	0.05	0.05
Gothaer	00.00	0.00	0.00	0.01	0.02	0.03	0.04	0.04	0.02	0.03	0.03	0.03	0.04
Maxima	0.00	0.00	0.00	0.00	0.01	0.10	0.20	0.29	0.24	60.0	0.08	0.00	0.02
Nationale Nederlanden	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.02
Halali	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02
Vitalitas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Adria Way	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.01
Kravag	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.02	0.04	0.05	0.01
Czech Insurers Bureau	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	00.0	0.00
ARAG	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.00	0.00
Zurich	0.00	00.0	00.0	0.00	60.0	0.08	n'n	00.0	0.00	00.0	1.31	01.1	00.00
Chmelarska	0.00	0.00	0.00	0.00	0.00	0.03	0.11	0.21	0.28	0.41	0.56	0.71	0.00
Certusia	0.00	0.00	0.00	0.00	10.0	0.03	0.08	0.14	0.13	ZL-0	0.0/	00.0	0.00
CP Ulrect	0.00	00.0	0.00	0.00	0.0	0.00	n'n	0.00	0.00	0.00	0.0	00.0	00.00
not allocated	0.00	3.17	0.28	0.02	0.44	0.52	1.77	6.0	96.0	0.1	0.0	00:0	0.00
Patria Martina	0.00	0.00	0.00	0.00	20.0	0.08	0.09	0.10	0.04	0.00	0.0	0.00	0.00
Morense Morense	0.0	000	3.21	4.03	4.4	0.00	0.00		0.0	00.0	0.0		0.0
mutava Austria Coll	0.0	800	000	000	1.12	0.01	200	000	800	0.0	300	000	
Oteina noiistevua	000	000	0.00	0.30	010	000			000	000	86	000	0.0
Market total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Concentration ratio CR4	100.00	99.87	97.98	92.09	87.39	82.67	79.15	82.41	79.50	72.68	71.09	70.04	69.45
Concentration ratio CR8	100.00	100.00	99.19	97.24	95.95	93.94	92.02	93.79	91.63	87.85	86.65	86.99	87.31
Herfindahl Index	10 000	8 937	7 547	5 916	4 996	4 324	3 783	3 739	3 055	1 976	1 970	1 882	1849



Module 7.1.1 Market analysis







Figure 1. Czech insurance market: Concentration ratio development

Figure 2. Czech insurance market: Herfindahl index development





5.6 Analysing insurance financial indicators

There are a number of commonly used financial ratios that can be used to gain insight into an insurer's financial situation. These include ratios that consider:

- Claims. For example, relative to premiums, in terms of trends over time, and comparing actual experience to that expected (in pricing).
- Expenses. For example, relative to premiums, in terms of trends over time, and comparing actual experience to that expected (in pricing).
- Lapses. That is numbers of policyholders who discontinue their insurance coverages for reasons other than the insured event against which they took out the policy occurring. For example, in terms of trends over time, and comparing actual experience to that expected (in pricing).
- Investment yields. For example, comparing actual experience to that expected (in pricing), trends over time, relativity to market expectations and reflecting any constraints imposed by the liabilities the assets are held to support.
- Capital and Solvency. Amounts held relative to the technical provisions held, statutory minimums required, and trends over time.

While these types of ratios are useful in reviewing and assessing the situation of a particular insurer, they are also valuable as they provide the data to obtain a view of what is typical over the marketplace. That is, market averages and ranges. Comparing individual insurer performance against these can be valuable for identified outliers. Outliers do not necessarily indicate a problem, but they should be investigated further as they may suggest some unusual behaviours or circumstances.

This module does not pursue the investigation of financial indicators further. Other Core Curriculum modules do this and interested readers are encouraged to consult them.

5.7 Analysing market conduct of insurers

This subsection describes indicators the values of which clearly are expressed in figures (in other words, may be subject to quantitative analysis), while verbal commentary plays only a complementary role. It is more difficult to define a comparative scale (or indicator) that enables measuring and analysing the conduct of insurers in the market. Nevertheless, consumer protection is the dominant task of the supervisor, and supervision of market conduct of insurers often forms a significant part of it. Therefore, the market conduct of insurers and its development also should be analysed.



Consumer protection can be split into two processes. The first is *general preventive protection* through:

- Supervising the financial soundness of insurers, which as a consequence means their abilities to meet their existing and potential future liabilities-that is, prudential supervision, and
- Supervising the market conduct of companies, that is, their compliance with rules of conduct established by the supervisor and/or elsewhere in the legislation.

The second process may include a claim or group of claims that:

- Have been incorrectly or inappropriately handled (e.g. an insured(s) has been told their claim is not covered when in fact it is covered)
- Have been incorrectly dealt with because of unclear policy terms
- Should have been paid because despite what the insurance policy says the insured(s) was/were misled by advertising as to coverage, and/or
- Should be paid because there has been market misconduct by an insurer's distribution network.

It may also include matters such as misleading advertising and/or sales communications by insurers or their distributors that induce consumers to purchase insurance that they did not really want, need or was inappropriate to their needs.

The follow-up, particular case protection may involve frequent and detailed reporting by the insurers (including detailed reporting individual cases and passing the complete case files to the supervisor) to be fully efficient and create strong pressure on the insurers with respect to consumers' (policyholders') protection. Onsite inspections often include inspection of complaints and problematic claims files (particularly those that proceed very slowly and/or lead to a lawsuit), and of revised advertising materials, policy forms, and other printouts used for advertising, marketing, and concluding policies, particularly if such an inspection is not performed on the basis of reports to supervisors and/or offsite monitoring.

Dealing with consumers' complaints and claims with the supervisor requiring insurers to handle claims in a timely, fair and transparent manner and also requiring insurers and intermediaries to handle complaints in a timely and fair manner.

The following sections briefly comment how market analysis may help in assessing complaints.



5.8 Consumers' complaints

Market analysis of consumers' complaints consists of:

- Analysing the frequency of complaints
- Analysing the timeliness in answering the complaints, and
- Analysing the fairness of the approach in answering the complaints.

There are no established standards for how to evaluate the frequency of consumers' complaints and the timeliness and fair approach of their responses. Therefore, the example below describes just one possible system, which can be replaced by another one or further developed and/or adjusted to local market environments and legislation.

When analysing complaints, the supervisor will be in a difficult position. It is not only the number of complaints that must be considered, but also their reasonability and severity–and here the correct assessment and evaluation often requires experience. Similarly difficult are the assessment and evaluation of fair answering of complaints.

Example

To enable transposition of consumers' complaints—and all kinds of complaint should be included: ungrounded or unfair refusal of claim settlement, reduction or delay in claim settlement, incorrect attempt to terminate policies, unfair advertisement, and unclear insurance terms and conditions—regardless of being collected by the supervisor or the insurer, into a measurable indicator enabling evaluation of development over time, the insurance authority may establish a "severity scoring," for instance:

- 1 points for ungrounded complaint
- 2 points for complaint on incorrect behaviour without financial impact on consumer. Please note, any financial effect on the client caused by incorrect behaviour by the insurer is not acceptable. Here the words "financial effect" are used only as an abbreviation of "What would happen if the client did not raise the complaint?"
- 3 points for complaint on incorrect behaviour with small financial impact on consumer
- 4 points for complaint on incorrect behaviour with medium financial impact on consumer, and
- 5 points for complaint on incorrect behaviour with large financial impact on consumer.



Similarly, "timeliness scoring" may be as follows:

- 1 point for answer without unnecessary delay
- 2 points for answer within reasonable period
- 3 points for delayed answer, and
- 4 points for significantly delayed answer. Since all complaints must be answered, a temporarily missing answer is scored as "What would the scoring be if the answer is dispatched at the moment of scoring?"

If the answer needs a preparation period (that is, the complaint cannot be dealt with immediately), the insurer should send an immediate "registration" letter informing the complainant:

- That the complaint was received by the company
- That the complaint was passed on for further processing (and to whom), and
- When the "material" reply will be sent.

Loading of 1 point will be added in the case of missing (one of) the abovementioned items in the "registration" letter and another 1 point in case of late dispatch of such letter.

"Fairness scoring" may be as follows:

- 1 point for fair and formally correct answer
- 2 points for fair answer with formal mistakes
- 3 points for answer whose fairness is disputable, and
- 4 points for unfair answer.

Then, the severity scoring Sc, timeliness scoring Tc, and fairness scoring Fc relative to the number of policies NP in the current period can be expressed as:

Sc = (Σ (s_i-1)) / NP, where s_i is the scoring for the ith complaint

Tc = (Σ (t_i-1)) / NP, where t_i is the scoring for the ith complaint

Fc = (Σ (f_i-1)) / NP, where f_i is the scoring for the ith complain

and total scoring of market conduct with respect to giving reasons for complaints and answering them, in the current period, TSc may be calculated as:

$$TSc = (\Sigma (s_i * t_i * f_{i-1})) / NP.$$



To evaluate the overall situation in complaints (including outstanding complaints from previous periods), indicators St (and similarly Tt, Ft and TSt) may be expressed as:

St = Sc + Sp, where Sp is equivalent of Sc for outstanding past complaints.

Such scoring can be performed either on the basis of the regular reporting of individual insurers or, better, as a part of onsite inspections, and further evaluated and analysed market-wide on a regular basis and with respect to development over time. Companies showing results worse than the market average will deserve larger attention of the supervisor.

5.8.1 Claims handling

Similarly to complaints, claims handling should be evaluated with respect to timeliness and fairness. Unlike complaints, it may be impossible to deal with individual claims. However, the supervisor may require from individual companies statistics showing the average settlement time and percentages of claims and amounts paid within certain time limits after claim notifications by the policyholders. Fairness also may be evaluated as a success ratio of claims disputed by the consumers and/or insurers at the court or before a dispute resolution body (that is, the number of disputes resolved by the courts/dispute resolution body in favour of the insurers, expressed as a percentage of the total number of court cases).

No generally accepted standards exist in this respect. Due to the scope of this module, it is left to the reader to determine how the supervisor may approach this area. Inspiration may be taken from the example presented above. It is obvious that the accepted solution will largely depend on the local legislation, market development level, and capabilities of the supervisor.

5.8.2 Fair competition behaviour

While all indicators mentioned above enable quantitative analysis (although sometimes quantification is difficult), the overall market behaviour is hardly quantifiable. Yet, market analysis is also important in this area. To analyse fair competitive behaviour, the definition of such behaviour is first needed–and even this is not easy. In general, market behaviour includes all ways in which the insurer interacts with the public:

- Advertising
- Policy forms, general terms and conditions, and other printouts intended by the insurers for public use
- Internet pages of insurers
- Branch offices open to consumers
- Distribution networks



- Activities within insurance associations and similar institutions (such as nuclear insurance pools, green card offices), and
- Press conferences, press releases.

Market behaviour should be fair to all market players, policyholders, competitors, brokers, and agents, and also to the broader environment, that is, the general public. Significant offenses with respect to market behaviour usually are identified and classified in the insurance legislation or legislation that covers insurance, including adequate corrective measures that can be clearly imposed on misbehaving companies. Still, there can be a "grey area" of ambiguous interpretation of the law, gaps in legislation, and misbehaviour that is identified and classified insufficiently.

Fair behaviour can be broadly defined as the insurer behaving fairly in the market if it:

- Does not breach existing legislation
- Provides transparent and adequate public disclosure
- Its insurance terms and conditions and policy forms are written in a simple, transparent language and in a manner that does not leave room for misinterpretation, and
- Advertises and markets its products in such a manner that consumers know what they are buying and are not misinformed.

Misbehaviour can include, for example:

- Displaying information important to the policyholder (for example, exclusions from the insurance cover, coverage sub-limits, conditions on policy termination, conditions on claims reporting) insufficiently (in small letters or only at the end of forms and printouts), and
- Disseminating misinformation in advertising and marketing.

The supervisor's role is to

- Monitor and analyse market behaviour of insurers
- Take measures against misbehaviour where such cases are covered by existing legislation, and
- Seek amendment of legislation when misbehaviour cannot be adequately addressed by existing legislation.



5.9 Analysing distribution channels

Insurance legislation also usually includes regulation of distribution channels. Indeed, it would be difficult to supervise insurance without having the possibility to supervise brokers, agents, and other intermediaries and distribution facilities. The challenges involved in the supervision of distribution channels have significantly increased with the introduction of distance selling (offer and sale of insurance service via telephone and internet).

Analysis of distribution channels consists in keeping an eye on the development of shares in individual lines of insurance sold through various distribution channels, finding explanations why the share of a particular channel is increasing or decreasing, and checking whether legislation is interfering with the selection of channels. Sometimes, it may be difficult to obtain fully consistent and detailed data across the market.

Checking underwriters and their distributors for compliance with legislation is also important.

5.10 Analysing availability of products

Insurance products should be widely and easily available in a competitive environment to disable misuse of market power by the dominant players. The supervisor's task is to collect information on the market about individual products, analyse it, and take necessary measures.

Availability of products can be shown in the form of simple table, as shown in table 3. Schemes, for instance, may involve pooling arrangements with state participation. Protection against natural catastrophes in France, against terrorism in the United Kingdom, or against floods in the United States may serve as examples. It is important that such information is broadly available to the public, thus helping consumers to find solutions in covering their insurance needs. In case some of the companies do not operate throughout the whole market territory, it would be helpful to provide information on the availability of products in various geographical areas.

More detailed analysis can be performed by using indicators (concentration ratio, Herfindahl Index) described above, analysing market structure and competition using information relating to the market shares of companies for individual products.

The supervisor can use the results of analysis of product availability in order to:

- Investigate the potential misuse of market power by focusing supervision on companies providing products where competition is insufficient, and
- Take measures, perhaps including recommending changes in legislation, in case of unavailability or insufficient availability of some products.

If products considered important are not available to the public, measures can go as far as creating state organised insurance schemes.



State intervention in response to the unavailability of insurance products may be triggered by:

- Reluctance of the private sector to provide cover after bad past experiences
- Difficulties in calculating an adequate price for the cover (for example, protection against terrorism)
- Unacceptability to the public of the price (prices charged by the private insurers may be is too high due to the uncertainty of results. Protection against terrorism is an example.)
- Insufficient capacity of the private insurance sector to cover the potential loss, and
- Other reasons.



Module 7.1.1 Market analysis



Table 3. Insurance products availablle in the Czech market



5.11 Analysing market developmental level

Indicators in this section—*insurance density* and *insurance penetration*—are of an informational nature only. They do not directly impact the execution of insurance supervision; therefore, they are mentioned only in brief. They serve as tools to enable the comparison of individual markets and for the analysis of market development over time. Benfield Group 2004c and Swiss Re 2003 may serve as examples of market analyses assessing an insurance market's developmental level. Swiss Re and the Benfield Group use indicators from this section and combine them with the descriptions of the financial and economic environments of the markets.

5.11.1 Insurance density

Insurance Density: Amount spent on purchasing insurance per capita during one year, expressed in monetary units.

This indicator enables a relatively reliable and fair comparison of individual markets. Its calculation needs only broadly available information (insurance market volume and numbers of inhabitants); therefore, it is easily accessible. Insurance density is usually calculated separately for life and non-life sectors. Its value, however, does not purely reflect the jurisdiction's wealth as it can be impacted by local jurisdictional and particular market conditions.

For example, in jurisdictions in which local legislation requires or encourages retirement pensions to be funded through life insurance products, the ratio of life insurance density compared to non-life insurance density is significantly above average. This is demonstrated in the figures 3 and 4 below, taken from the Swiss Re Sigma publication. Finland, Japan, and South Africa serve as typical examples. In this respect, in Iceland, pensions are not funded through insurance; therefore, Iceland's spending on life insurance is low despite the relative economic wealth of its inhabitants).

5.11.2 Insurance penetration

Insurance Penetration: Proportionate relationship of total market premiums to gross domestic product, expressed as a percentage.

Similarly to insurance density, insurance penetration is also easy to calculate because it is based on widely available information. This indicator is normally used to compare market development: the higher the insurance penetration ratio, the more developed the market. As with insurance density, this interpretation is subject to the caveat that in jurisdictions in which pensions are not funded through life insurance, the insurance penetration may be lower than



in other jurisdictions, despite similar levels of both market development and jurisdiction wealth.

Differences in the value of this indicator between the most and least developed markets are striking. The values range from less than 1 percent for some African and Asian jurisdictions to more than 10 percent (South Africa, Switzerland, and United Kingdom, among other jurisdictions).

Both indicators described above (insurance penetration and insurance density) highly correlate, despite the fact that one is expressed as monetary units and the other as a percentage.







Source: Swiss Re Economic Research and Consulting, sigma No. 3/2004.



Figure 4. Insurance density and penetration in the emerging markets in 2003



5.12 Insurers' ratings

In some respects, rating agencies, and independent auditors perform tasks similar to those of the supervisor. They check financial soundness, performance, and strategies of (re)insurers and markets. Supervisors may be interested in comparing their own findings with those of rating agencies. Development of ratings over time also may serve as an indicator of market stability.

5.13 Reinsurance

Reinsurance is a stabilizing factor for insurers. This occurred as an example in the Czech insurance market: unprecedented insured losses incurred during August 2002, reaching approximately CZK 35 billion (US\$ 1.4 billion), which represented an additional loss ratio of more than 60% for the non-life sector. Reinsurance paid more than 98% of these losses; without reinsurance, all the local insurers would have gone bankrupt. It is relatively easy to calculate the impact of reinsurance after an event or at year-end; it is not, however, easy to calculate how much reinsurance is needed in advance. There are several basic risks connected with reinsurance that should be analysed by the supervisor:

- Risk of insufficient reinsurance cover, which can be further split into:
 - Risk of too high net retention (insurer is not sufficiently covered in case of large claims or an unexpected frequency of smaller claims), and
 - Risk of insufficient reinsurance capacity (particularly in the case of catastrophic events).
- Risk of unavailability of reinsurance (particularly after large events, when the reinsurers become reluctant to continue providing cover), e.g. reluctance to cover terrorist risk after 2001 World Trade Center attack), and
- Counterparty credit risk of failing reinsurers.

A frequently used risk management method is modelling results on the basis of various adverse scenarios. This method should be also employed by supervisors on the market-wide level. It is particularly useful for assessing whether their reinsurance protection is adequate for the risks underwritten by the insurers. However, the existing sophisticated tools used by the insurance markets have not been constructed to serve the needs of supervisors but rather those of the individual insurers.

The position of the supervisor with respect to the market reinsurance protection analysis is further complicated by the fact that the scope of protection varies over time. Insurers usually tend to buy more protection when the market is "soft" (that is, reinsurance is cheap) and increase their retentions (that is, buy less reinsurance) when the market is "hard".



Individual companies can never be fully protected against all of the risks they face. On the other hand, they should buy sufficient reinsurance protection. In the case of catastrophic events, many believe that reinsurance should provide protection from failure due to events that are expected to occur no more frequently than once every 200 years.

Non-traditional reinsurance and the fact that it may impact the market also should be mentioned here. Although non-traditional reinsurance operates in many respects like traditional reinsurance, it has its own specific risks which the supervisor should understand and assess. Further, non-traditional reinsurance is a growing segments of the market, approaching to 20% of the global reinsurance capacity. Other CC modules and the ICPs discuss reinsurance in more detail.



6 Organising market analysis in supervisor

Supervisors typically have objectives targeting the financial soundness of individual insurers and the financial stability of the insurance market. Proper analyses of individual companies, the insurance market, and the national and international contexts are essential to achieve this end.

There are no internationally accepted standards as to how supervisors should carry out market analysis. Individual supervisors deal with this matter in very different ways. The following subsections provide a general description of the steps taken by the supervisor when preparing and maintaining market analysis. For some supervisors, this information may serve as a guideline how to establish a market analysis function within their frameworks. Others may use it as a checklist for completeness and evaluation of activities already performed. To keep it concise and clearly organised, the subsection on planning the market analysis contains only the list of activities, while the following subsection explains individual activities and comments on them.

6.1 Planning the market analysis

The individuals who will coordinate and carry out the market analysis should be selected taking into account the intended nature, scope and purpose of the analysis, as well as the characteristics of the market environment. Market analysis should include:

- Regular preparation of insurance indicators and their development trends
- Regular preparation of insurance-related indicators (such as investment, demographics, and road accidents), their development trends, and the evaluation of their importance (influence) for the insurance market, and
- Ad hoc, irregular analytical reaction to important events that impact the insurance market (both with respect to insurance events such as natural catastrophes and market environment development events such as changes of legislation).

The main objectives of the analysis (nature, scope, purpose) will be further fine-tuned during the initial analysis. The Supervisor should consider the following as part of its initial planning and on-going adjustments to the process

- Appoint a responsible market analysis coordinator
- Define data to be collected for market analysis and information to be publicly released
- Explore and communicate possible sources of data and data publishers
- Establish procedures to check accuracy of data provided



- Define indicators to be calculated and market analysis procedures to be performed on the basis of data provided
- Define tolerance limits for individual indicators
- Establish regular schedule of communication with data providers (sources of data) and data publishers, and the schedule of market analysis activities
- Draw conclusions with respect to supervisory actions to be taken based on results of market analysis
- Regularly review and modify scope of market analysis and publicly released data, and
- Decide on the scope of additional reporting and analysis in case of particular market-wide events of importance for the market's financial stability.

6.2 Comments and explanations

As with any work that depends on information, the market analysis will be unsuccessful if the information is incomplete, delayed, or not properly used. Indeed, the supervisors themselves (among others) should supply much of the data for market analysis and also obtain much of the benefit from it!

6.2.1 Appointing a market analysis coordinator

The market analysis coordinator should be a:

- Skilled person with experience in the insurance industry and financial markets
- Good organiser and communicator, and
- Person with mathematical background and good analytical abilities.

Performance of market analysis requires skilled resources, which may not necessarily be immediately available at the supervisor. Therefore, the market analysis coordinator may consider using market analyses from other sources and/or outsourcing some of the required activities. If this is done, confidentiality of information within the particular legal environment must be observed and taken into account. It is expected that over the long-term a supervisor will develop, if it does currently have, sufficient resources to carry out the market analysis internally.



6.2.2 Defining data

Data must be clearly and unambiguously defined to enable market-wide comparison and compatibility. Data inputs will likely include:

- Information required to assess the financial soundness of insurers (that is, data from financial statements of individual insurers)
- Other information collected by the supervisor during reporting and offsite monitoring
- Data collected during on-site inspections
- Data collected from other sources. Please note that a description and analysis of the market, its financial environment, international comparison, and insurancelinked data require numerous sources of diverse data, such as police (statistics of street accidents), financial analysis institutions (development of prices), and firemen (fire statistics), and
- Data describing the general development of the economy (such as GDP, inflation, and interest rates).

Publicly released information should contain not only the currently collected data, but also

- Data from previous periods (to show development trends)
- Results of market analysis (analytical indicators) when appropriate
- References to other information sources
- Verbal comments on the development of the insurance market, and on the economic, legal, and financial sector environments, and
- Evaluation of the period since the previous public release, including the description, comments, and data on particular market-wide events.

The scope of market-wide, publicly available information might be broadly consistent with the information requested for public disclosure by individual insurers.

6.2.3 Exploring data sources

As explained above, diverse data and data sources are needed to enable a comprehensive market analysis and public release of relevant information. Initial contacts must be made and regular communication established with such sources. It is not necessary that the supervisor itself carries out the public release of information. However, even if the release is made by another entity (such as the association of insurers or an independent analyst institution), the supervisor is responsible for ensuring that sufficient market data is available. Therefore,



external publishing may be organised in cooperation with the supervisor and the minimum scope of published information mutually agreed.

6.2.4 Correctness of data

Correctness of data (particularly data used to evaluate the financial soundness of individual insurers) must be checked to ensure that it will provide a proper basis for the supervisory evaluation and reliable information for consumers. Tools and requirements for relevant checking processes are described in other ICPs.

Collected data should be analysed, combined into indicators, and further processed to enable efficient and transparent use in supervisory processes. This thorough processing requires documented, clear and unambiguous definitions and descriptions of indicators, formulas, methods, and processes.

6.2.5 **Prompt supervisory intervention**

An important purpose of market analysis is to prompt supervisory intervention where needed. This may include taking preventive and corrective measures that are timely, suitable and necessary. To help achieve this end and to act transparently, tolerance limits (limits and thresholds representing "warning level" and/or "action level" of individual indicators and other results of market analysis) can be defined. Exceeding these limits should trigger an appropriate supervisory reaction.

6.2.6 Schedule

To achieve reliable and timely performance of all activities, a detailed schedule (including description of activities, time limits, and responsible persons) should be defined, recorded, and made available for all concerned. This schedule should include not only communication with external partners but also communication and data flow among individual departments of the supervisor, as well as communication with other concerned financial market authorities, both domestic and foreign.

6.2.7 Tolerance limits

Exceeding established tolerance limits can trigger an appropriate (re)action. This does not necessarily imply an immediate automatic intervention activity defined in advance but rather a decision-making process on how to address the current situation. Timeliness, completeness, and availability of information are of highest importance in order for supervisory actions to be effective.



6.2.8 Review

The Supervisor should regularly check and review the appropriateness of market analysis activities and publicly released information in response to the following:

- Changes in the market
- Development of the skills and capacities of the supervisory activity, and
- Changes in the scope of the supervisory mandate and legislation (that is, if a new regime aims at achieving a higher level of consumer protection).



7 **Review questions**

The following exercises are designed to help you evaluate your understanding of market analysis. Therefore, where an answer requires using words, you are encouraged not to use the exact words and sentences that appear in this module (although the sample answers in Appendix 1 are constructed in this way) but to answer using the key words succinctly.

On the other hand, the exercises that require numerical answers should be accompanied with explanations (words, not mathematical proofs) showing that the correct answer is not a result of guessing but of understanding. Some questions are relatively difficult with respect to numerical calculations, so the preferred way to solve them is to use a computer. It is not the purpose of this module to test your numerical calculation abilities. On the other hand, market analysis is a world of numbers, figures, and tables and figures.

- R1 What are the learning objectives of this module? List as many as possible.
- R2 What are the essential criteria of this ICP on Market Analysis?
- R3 What are the benefits of market analysis for the supervisor?
- R4 What are the steps to establish a market analysis function at the supervisor?
- R5 What are the methods of checking and improving the sensitivity of market analysis?
- R6 What are some possible changes in the environment in which the market operates? How can they influence the market?
- R7 The concentration ratios of a market are: CR4 = 56 percent, CR8 = 82 percent. Can we guess something about the number of companies in this market? What is the minimum number of companies in a market with these parameters?
- R8 What is the maximum possible value of the Herfindahl Index?
- R9 What is the minimum possible value of the Herfindahl Index in a market with 25 participants?
- R10 The average claims ratio of an insurance market is 77 percent and the average expense ratio is 26 percent. The combined ratio is thus 103 percent. Does this percent mean that this market is unprofitable?
- R11 Insurer A has 1,000,000 clients and on average 1.5 policies per client, and during previous year recorded 50 complaints per month. Insurer B has 30,000,000,000 MU of written premium, average premium 60,000 MU per policy, and 60 outstanding complaints from previous year; 80 percent of the complaints have been already settled. Which company has a lower frequency of complaints?
- R12 Given the situation in the previous question, can we conclude that the insurer with a lower frequency of complaints has a better market conduct than the other company?



- R13 A market has the following parameters:
 - a) GDP 10,000,000,000 MU
 - b) 20,000,000 inhabitants
 - c) Insurance penetration 4.5 percent.

What will be the increase in insurance density (insurance spending per capita) after 5 years if GDP grows 4 percent per year and population 0.5 percent per year, and the insurance penetration ratio at the end of this period is 7.5 percent?

R14 What will be the market growth of the market described in question 15 in nominal terms and in real terms (considering 2 percent inflation) over this period of 5 years?



8 Further reading

8.1 General sources

Many texts are available which are relevant to the material in this module. These texts may also go beyond the scope of this module, but usually include introductory chapters on the basic topics.

When reading these texts it is useful to consider the principles being as well as the details of their application in a particular environment. Also, it is important to recognise that as the environment changes the relative importance of issues may also change.

Other sources of information are also available. For example, in many countries there is an insurance institute of some form. The Chartered Insurance Institute (CII), based in England, provides a range of good educational programs and has links to more than 70 other insurance institutes worldwide (see <u>www.cii.co.uk</u>).

In some cases, supervisory websites are also valuable sources of information. This can be particularly the case when supervisors publish explanatory information explaining their requirements and approaches.

In the context of this module, see also, for example, Swiss Re Sigma material (see <u>www.institute.swissre.com</u>) and the interactive materials at the Swiss Re explorer website (<u>www.sigma-explorer.com</u>).



Appendix 1: Answers to Review questions

- Answer 1 Compare your answer with the learning objectives in the "This module" section.
- Answer 2 Compare your answer with section 2.
- Answer 3 Compare your answer with section 2.
- Answer 4 Compare your answer with section 6.
- Answer 5 Compare your answer with section 2.
- Answer 6 Compare your answer with section 4.
- Answer 7 We can find the minimum number of companies in the market. The companies in 5th to 8th place have a market share of 26 percent. Therefore, the company in 9th place cannot have more than 6.5 percent (that is, the average of the 5th to 9thplace companies, which is valid also for the 10th company). Hence, there are at least 11 companies in the market.
- Answer 8 The Herfindahl Index formula is constructed to decrease when the competition improves. It reaches maximum value in the monopoly market: 10,000.
- Answer 9 The Herfindahl Index formula is constructed to decrease when the competition improves. In a market with given number of companies, the minimum is reached when the market is split into equal shares; in our case, 25 companies with a market share of 4 percent. In such a situation, the Herfindahl Index equals 400.
- Answer 10 No. The negative underwriting result can be balanced by investment income.





Answer 11 In the respective year, insurer A had 1,500,000 policies and 600 complaints, a rate of 40 complaints per 100,000 policies. Insurer B had 500,000 policies and 300 complaints, a rate of 60 complaints per 100,000 policies. Hence, company A has a lower frequency of complaints.

	Earned premium	Claims incurred	Claims paid	Claims provisions	Other tech. expenses	Claims ratio (%)	Expense ratio (%)	Combined ratio (%)
Before the incl	rease							
Company A	250	150	258	125	87.5	60.0	35.0	95.0
Company B	150	99	69	30	39.0	66.0	26.0	92.0
Company C	100	60	40	20	30.0	60.0	30.0	90.0
Market	500	309	134	175	156.5	61.8	31.3	93.1
After the increa	ase							
Company A	250	175	25	150	87.5	70.0	35.0	105.0
Company B	150	105	69	36	39.0	70.0	26.0	96.0
Company C	100	64	40	24	30.0	64.0	30.0	94.0
Market	500	344	134	210	156.5	68.8	31.3	100.1

Answer 12 No. This information has only an indicative value. Further analysis must be performed and other factors must be taken into consideration. These factors include line of business, complexity of policies issued by both companies, severity of complaints, and ways in which the complaints were settled. Besides, complaints comprise only one part of the market conduct of companies. Their behaviour in other areas such as advertising, sales, and transparency of their policy conditions also must be taken into account.

Answer 13 The answer is shown in the following table.

	GDP (MU)	GDP increase (%)	Population	Pop. increase (%)	Insurance penetration (%)	Insurance spending (%)	Insurance density (MU)
Starting position	10,000,000,000,000	4.00	20,000,000	0.50	4.50	450,000,000,000	22,500
After 1 year	10,400,000,000,000	4.00	20,100,00	0.50			
After 2 years	10,816,000,000,000	4.00	20,200,500	0.50			
After 3 years	11,248,640,000,000	4.00	20,301,503	0.50			
After 4 years	11,698,585,600,000	4.00	20,403,010	0.50			
After 5 years	12,166,859,024,000		20,505,025		7.50	912,489,676,800	44,501

The increase in insurance density is from 22,500 MU to 44,501 MU, a growth of 22,001 MU, or by 97.8 percent.



	Insurance spending (MU)	Insurance spending at starting position (MU) (inflation adjusted)
Starting position	450,000,000,000	450,000,000,000
After 1 year		459,000,000,000
After 2 years		468,180,000,000
After 3 years		477,543,600,000
After 4 years		487,094,472,000
After 5 years	912,489,676,800	496,836,361,440

Answer 14 The answer is shown in the following table.

The market growth is from 450 billion MU to 912.5 billion MU, which is a nominal growth of 103 percent over the five year period. After inflation adjustment, the growth was 84 percent.



Core Curriculum for Insurance Supervisors

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Further information

Web: <u>www.iaisweb.org</u>

Email: IAIS-Implementation@bis.org

Principles for Insurance Regulation: An Evaluation of Current Practices and Potential Reforms

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The recent financial crisis and its cascading effects on the global economy have drawn increased attention to the regulation of financial institutions including insurance companies. While many observers would argue that insurance companies were not significant contributors to the crisis, the role of insurance companies in the financial economy and their potential vulnerability to systemic risk have become matters of considerable interest to policy-makers and regulators. In this context, this paper examines the basic economic principles that should govern the regulation of insurance and employs these principles in assessing current regulatory practices and potential reforms. Specifically, it articulates the basic rationale for insurance regulation, which is the remediation of market failures where regulation can enhance social welfare. In insurance, the principal market failures that warrant regulatory intervention are severe asymmetric information problems and principalagent conflicts that could lead some insurance companies to incur excessive financial risk and/or engage in abusive market practices that harm consumers. This provides an economic basis for the regulation of insurers' financial condition and market conduct. At the same time, the regulatory measures that are employed to correct market failures should be efficient and effective. Judged against these principles, the systems for solvency and market conduct regulation in the United States warrant significant improvement. There appears to be little or no justification for regulating insurance rates in competitive markets and the states should move forward with full deregulation of insurance prices. The EU appears to be much farther ahead in terms of implementing best practices in the regulation of insurers' financial condition under its Solvency II initiative. It is also much closer to the desirable goal of full price deregulation than the United States. The Geneva Papers (2012) 37, 175–199. doi:10.1057/gpp.2011.9; published online 5 October 2011

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Introduction

The recent financial crisis and its cascading effects on the global economy have drawn increased attention to the regulation of financial institutions including insurance companies. While many observers would argue that insurance companies were not significant contributors to the crisis, they did feel its effects, particularly in the life sector.^{1,2} A number of life insurers were stressed because of their investments in

¹ See Wang *et al.* (2009).

² The American International Group (AIG) received prominent attention because of its losses on credit

mortgage-backed securities and other real estate-related assets.³ As the crisis triggered a severe economic recession and a precipitous fall in stock prices, both life and non-life insurers suffered further asset losses. Some took advantage of government programmes to bolster their capital. Fortunately, these developments did not trigger a wave of insurer insolvencies. Nonetheless, the role of insurance companies in the financial economy and their potential vulnerability to systemic risk have become matters of considerable interest to policy-makers and regulators.

In this context, this paper examines the basic economic principles that should govern the regulation of insurance, and employs these principles in assessing current regulatory practices and potential reforms. This assessment is particularly timely as policy-makers review and restructure the framework for the regulation of financial institutions. It should be noted that insurance regulatory reform has been an ongoing process with initiatives that began before 2008. Still, the recent financial crisis has created a heightened sense of urgency regarding reform and added new issues for policy-makers to consider. Various stakeholders have a vested interest in this process and reasons to advocate for reforms that are economically sound and that will promote viable and efficient insurance markets.

This paper reviews fundamental principles of insurance regulation that should be applicable in various jurisdictions and assesses current practices and potential reforms in light of these principles. The paper is organised as follows. The section "Economic principles for insurance regulation" outlines the basic rationale for the regulation of insurance and the economic principles that can be derived from this rationale. Several key areas of insurance regulation are addressed including solvency, prices and market conduct, with particular emphasis on financial (i.e., solvency) regulation. The section "Evaluation of current practices and potential reforms" then applies these principles in assessing the soundness and efficiency of current regulatory practices and considering how these practices might be improved. This assessment focuses primarily on insurance regulation in the United States with some extension to the European Union (EU) and other countries. The final section summarises and concludes.

Economic principles for insurance regulation

Why insurance should be regulated

The economic foundation for regulation is based on the presence of market failures.⁴ These market failures are judged against the social welfare maximising conditions for perfect competition. Perfect competition requires numerous buyers and sellers in a

default swaps due to the activities of its investment subsidiaries and not its insurance operations. Some insurance companies, including insurers affiliated with AIG, did suffer losses from their securities lending activities. In addition, financial guaranty insurers suffered severe losses due to their issuance of credit default swaps and mortgage insurance. In Europe, Swiss Re suffered significant write-downs in the value of its assets due to its issuance of credit default swaps and investments in mortgage-backed securities.

³ A number of life insurers were also "squeezed" by lower returns on their investments and the guarantees embedded in their variable annuity products.

⁴ See, for example, Spulber (1989), Viscusi et al. (2000).

market, the lack of barriers to entry and exit, perfect information, and a homogenous product. Under these conditions, the joint surplus or gains from trade of producers and consumers is maximised. Of course, few if any markets satisfy the conditions for perfect competition in the real world. Hence, in assessing the need for and benefits of regulation in an imperfect world, markets are often judged against a standard of "workable competition" that reasonably approximates the conditions for perfect competition to the degree that government intervention cannot improve social welfare.⁵ This standard of workable competition has the desirable attribute of focusing attention on the presence of market failures wherein government remedies can improve market efficiency and enhance social welfare.

Potential market failures in insurance include severe asymmetric information problems and principal-agent conflicts that could lead some insurance companies to incur excessive financial risk and/or engage in abusive market practices that harm consumers. Insurance consumers, particularly individuals and households, face significant challenges in judging the financial risk of insurers and properly understanding the terms of insurance contracts. There is also the possibility that insurers could acquire sufficient market power to restrict competition, resulting in barriers to entry, higher prices and excess profits.

The issue of systemic risk has garnered considerable attention due to the recent financial crisis. Systemic risk could be defined as the risk that a market or financial system could experience severe instability, potentially catastrophic, caused by idiosyncratic events or conditions in financial intermediaries. It arises from the links between firms in a system or market in which the failure of one or more firms can have cascading effects that could potentially bring down an entire system or market.⁶ Arguably, this is a kind of market failure that can arise from excessive risk-taking by financial institutions whose failure can lead to the failure of other firms in a market or system.

In contrast to market failures, there are a set of circumstances that could be termed "market problems". These are not failures in the economic sense but constitute "undesirable" market outcomes, for example high prices, the unavailability of insurance coverage, etc., that result from conditions affecting the cost of risk, rather than violations of the conditions for perfect or workable competition. For example, in some markets insurance may be expensive because claim costs are high. One would expect the price of insurance to be commensurate with expected claim costs. While this may cause hardships for consumers, it is a natural result of properly functioning market forces and not a condition that can be remedied by regulation *per se*.

This kind of situation can be contrasted with true market failures in which there is a significant violation of the conditions for workable competition. The rationale for government intervention when market failures occur is based on promoting or restoring economic efficiency. For example, an insurer may take on too much financial risk because its owners would not be required to pay the full costs of its insolvency due to limited liability of the corporate form of the organisation. In many industries, the

⁵ Scherer and Ross (1990).

⁶ See "Systemic Risk" at *www.en.wikipedia.org/wiki/Systemic_risk#cite_note-2*.

creditors of firms may be able to sufficiently judge the firms' financial risk and take steps to protect their interests. However, the circumstances for certain financial institutions such as banks and insurance companies are arguably more problematic for creditors. One could make the case that the costs of monitoring are so high for consumers that it is cheaper for the government to undertake this task and take action against insurers that incur excessive financial risk. If it is more efficient for the government to perform this monitoring and employ other compliance/enforcement measures, then regulatory intervention could increase social welfare.

Similarly, if there is collusion among insurers due to market power resulting from the presence of a small number of firms and entry/exit barriers in a particular market, then the government could remedy this market failure through antitrust measures or regulating prices. The assumption here is that the government would ensure that the prices charged would be same as those that would be set in a competitive market. This is an efficiency-based argument that implies that the regulator would attempt to enforce prices equal to marginal costs. If, in contrast, high insurance prices are due to high levels of risk (and not collusion among insurers) then regulation cannot enforce lower prices without causing market distortions. This distinction is important because regulatory intervention and policies often can be motivated by the desire to "fix" or ameliorate market problems rather than remedy legitimate market failures.

Optimal regulation is based upon an ideal set of policies that attempt to replicate the conditions of a competitive market and maximise social welfare. This theoretical model of regulation is based on the premise that regulators seek to remedy market failures and not market problems caused by other external factors. This may include failures that would otherwise cause insurers to incur an excessive risk of insolvency and/or engage in abusive trade practices, for example, misrepresenting insurance products, refusing to pay legitimate claims, etc. This assumes that regulators have perfect information and can determine and implement the correct market solutions, an assumption that may not be valid under some circumstances. Hence, not all market failures can necessarily be remedied by regulation, and the desirability of any particular regulatory intervention must be assessed in terms of regulators' ability to remedy a specified market failure and any deadweight costs associated with regulatory intervention that may exceed the benefits from intervention. Further, this line of reasoning presumes that regulators will employ "best practices" and the most efficient measures to address market failures.

Solvency regulation

The social welfare argument for the regulation of insurer solvency derives from inefficiencies created by costly information and principal-agent problems.^{7,8} Owners of

⁷ Munch and Smallwood (1981).

⁸ Costly information refers to the fact that it is costly for consumers to acquire information about the financial condition of an insurer and the relative value of its products in relation to their prices. Principal-agent problems refer to the difficulty that a consumer (the principal) faces in monitoring and controlling the activities and financial risk of an insurer (the agent), once the consumer has signed a contract with the insurer and paid premiums for coverage of future claims and benefit obligations.

insurance companies have diminished incentives to maintain a high level of safety to the extent that their personal assets are not at risk for unfunded obligations to policy-holders that would arise from insolvency. The argument is that it is costly for consumers to properly assess an insurer's financial strength in relation to its prices and quality of service.⁹ Insurers also can increase their risk after policy-holders have purchased a policy and paid premiums—a "principal-agent" problem that may be very costly and difficult for policy-holders to control.

There are other aspects of excessive insolvency risk that may motivate regulatory intervention. Financial regulators are also concerned about "contagion" and the possibility that a spike in insurer insolvencies could induce a "crisis of confidence" that may have negative effects on the industry. Further, there may be negative externalities associated with excessive insurer insolvency risk as the costs of unpaid claims may be shifted beyond policy-holders to their creditors. Hence, it is common for the regulation of financial institutions to be coupled with some form of insolvency guarantees (e.g., deposit insurance, insurance guaranty associations, etc.) that cover at least a portion of the obligations of bankrupt firms. Note, this phenomenon does not constitute systemic risk as defined above but does reflect the negative externalities associated with the failure of one or more insurance companies.

Arguably, the goal of optimal insurance solvency regulation should not be to minimise insolvencies as the costs of achieving such a goal would likely exceed the perceived benefits. A more reasonable goal would be to minimise or limit the social cost of insurer insolvency within acceptable parameters. The social cost is more than the lost equity of the insurer as it includes the effects on policy-holders and third parties who may be creditors of insurers. Regulators can potentially limit insolvency risk by requiring insurers to meet a set of financial standards and taking appropriate actions if an insurer assumes excessive default risk or experiences financial distress.¹⁰

Price regulation

There are two potential rationales for regulation of insurance prices. The traditional explanation for regulation of insurance prices involves costly information and solvency concerns.¹¹ According to this explanation, insurers' incentive to incur excessive financial risk and even engage in "go-for-broke" strategies may result in inadequate prices. Some consumers might buy insurance from carriers charging inadequate prices without properly considering the greater financial risk involved. In this scenario, poor incentives for solvency safety could induce a wave of "destructive competition" in which all insurers are forced to cut their prices below costs to retain their market

⁹ The costs of determining financial soundness are much lower today than they were in the past, as anyone with knowledge and access to the Internet can check an insurer's claims paying ability—provided by rating agencies—on the Internet. However, rating agencies cannot engage in enforcement actions (although they may pressure insurers to correct problems) and most countries do not accept the notion that they are an adequate substitute for government regulation.

¹⁰ See, for example, Cummins et al. (1995).

¹¹ Joskow (1973), Hanson et al. (1974).

positions.¹² In the United States, the solution offered was uniform prices developed by industry-rating organisations subject to regulatory oversight to prevent excessive prices.

This view essentially governed the regulation of property-casualty insurance prices in the United States until the 1960s, when states began to disapprove or reduce price increases in lines such as personal auto and workers' compensation insurance. The rationale that some might offer for government restrictions on insurance price increases is that consumer search costs impede competition and lead to excessive prices and profits.¹³ It also might be argued that it is costly for insurers to ascertain consumers' risk characteristics accurately, giving an informational advantage to insurers already entrenched in a market and creating barriers to entry that diminish competition. According to this view, the objective of regulation is to enforce a ceiling that will prevent prices from rising above a competitive level and enabling insurers to earn excess profits.

In addition, the public may express a preference for regulatory policies to lower or cap insurance prices consistent with social norms or objectives. This may not justify insurance price regulation based on the principles asserted above but, nonetheless, explains why insurance prices are regulated in some circumstances when a pure economic justification is not apparent. These circumstances may include government mandates that compel consumers or firms to secure certain types of insurance.

However, the empirical evidence does not tend to support a case for the regulation of insurance prices in most markets in developed countries where the insurance industry is relatively mature. For example, studies of insurance markets in the United States indicate that they are highly competitive in terms of their structure and performance.¹⁴ Entry barriers tend to be low and concentration levels rarely approach a point that would raise concerns about insurers' market power.

Further support for this assertion is provided by Table 1, which shows the number of insurers and concentration levels in major lines of business in the non-life sector in the United States in 2006. In excess of 1,270 insurer groups (including stand-alone companies) sold property-casualty insurance in 2006, with several hundred insurers competing in each major line. The principal measures of market concentration, the ten-firm concentration ratio (CR10), which is the market share of the top ten insurers, and the Herfindahl-Hirschman Index (HHI), which is the sum of the squared market shares of all insurers, also indicate competitive market structures in these lines. The top ten insurers accounted for less than 65 per cent of the premiums written in any given line and 40–50 per cent in many lines. Similarly, HHI values ranged from 255 to 784, with most lines falling between 300 and 500. These levels of concentration are considerably below levels that most economists consider necessary for firms to begin acquiring market power.¹⁵ Further, profits in both the life and non-life sectors in the

¹² This view likely stems from the periodic price wars (and subsequent insurer failures) that afflicted property-casualty insurance markets in the United States during the 1800s and early 1900s.

¹³ Harrington (1992) explains but does not advocate this view. Further, the cost of shopping for insurance has dropped dramatically for personal lines of coverage (see Brown and Goolsbee, 2002).

¹⁴ Cummins and Weiss (1991), Klein (1995, 2005) and Grace and Klein (2007).

¹⁵ According to the Department of Justice and Federal Trade Commission 2010 Horizontal Merger Guidelines, a market with an HHI below 1,500 is considered to be "unconcentrated".

Line	Number of	Pct. of sector	CR10 (%)	HHI	Since 1997	
	insurers	DP W (%)			Entries (%)	Exits (%)
Personal auto	389	33.2	64.1	651	29.4	48.9
Commercial auto	389	6.2	44.4	272	33.4	46.2
Homeowners	438	12.3	64.2	784	27.9	41.2
Fire & allied	544	4.2	53.7	502	24.8	41.6
Commercial MP	365	7.4	49.0	318	24.1	45.6
General liability	697	12.2	57.7	595	36.8	42.8
Medical malpractice	225	2.5	45.8	295	112.4	57.2
Workers' compensation	312	9.5	54.2	487	32.1	48.0
Other	715	20.0	43.1	255	26.2	45.8
All lines Combined	1,270	100.0	48.6	318	43.5	43.4

 Table 1
 Property-casualty insurance market structure in the United States: 2006

DPW: Direct Premiums Written; CR10: combined market share of the top ten firms; HHI: Herfindahl-Hirschman Index.

Source: National Association of Insurance Commissioners (NAIC) and author's calculations.



Figure 1. Annual rate of return net income as percentage of equity: 1995–2009. *Source:* Insurance Information Institute.

United Sectors tend to be in line with or below the rates of return earned in other industries as shown in Figure 1.

Over the last 50 years, the enforcement of uniform rates has eroded in the United States and industry organisations have moved to the promulgation of "advisory" rates or loss costs. This has caused insurer pricing to be much more independent and differentiated. Hence, it is not surprising that studies of the effects of the regulation of

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insurance rates have not uncovered significant benefits to consumers from such regulation.¹⁶

In the United States, prices/premiums for life insurance and annuity products have generally not been subject to direct regulation. Price regulation in the life sector is imposed indirectly through the regulation of life insurance and annuity products. In approving such products, regulators consider whether the premiums charged according to these contracts are commensurate with the benefits offered. In health insurance, almost all the states impose some form of rating constraints in the small group market but only 19 states impose rating constraints in the individual market.¹⁷

Market conduct regulation

A stronger case can be made for regulating certain insurer market practices, such as product design, marketing and claims adjustment. Constraints on consumer choice and unequal bargaining power between insurers and consumers, combined with inadequate consumer information, can make some consumers vulnerable to abusive marketing and claims practices of insurers and their agents.¹⁸ In the United States, there have been numerous instances in which insurance products have been misrepresented and insurers or their agents have been found guilty of sales abuses. For example, a number of life insurers settled legal suits in the late 1980s and early 1990s for agent practices that took customers out of safe policies and put them in inappropriate (high risk) policies.¹⁹ Although several prominent insurers were involved in some of these cases, the greater threat probably lies with firms or agents that are not highly motivated to establish and maintain a strong reputation for fair dealings with consumers. Hence, regulators need to be especially vigilant for "bad actors" who seek gains from abusive or fraudulent transactions. The industry has taken steps to mitigate market conduct problems through self-compliance measures and the establishment of a voluntary self-regulatory organisation (SRO). At the same time, regulators have promulgated new rules and bolstered their monitoring mechanisms.20

¹⁶ See, for example, Harrington (2002).

¹⁷ NAIC (2011).

¹⁸ It is true that consumers subject to unfair treatment might seek remedies through the courts and sometimes do so. However, legal remedies may not be feasible for consumers with limited resources and bills to pay. In addition, it may be difficult to secure financial damages from some fraudulent insurers.

¹⁹ It is interesting to note that the suspect sales practices were not discovered by regulators until after the initial lawsuits were brought. Some might view this as a regulatory failure but it also underscores the issue of regulators' capacity to proactively uncover and remedy certain market conduct problems.

²⁰ See Klein (2005) for a more detailed discussion of regulatory efforts to better police marketing and sales activities. The challenge faced by regulators is that rules tend to be somewhat arbitrary and cannot fully accommodate the variety of circumstances encountered in insurance transactions. Further, monitoring compliance with such rules can be difficult and costly given the large volume of transactions.

An optimal regulatory framework

In sum, optimal regulation should be designed to minimise the cost of insurer insolvencies, promote the pricing of insurance at marginal cost, promote reasonable trade practices, provide appropriate incentives for insurers to police their own practices and those of their agents, and provide the optimal amount of insurance. However, optimal regulation depends upon more than just the approach to regulation. It also depends upon where regulatory authority resides or how it is apportioned among different regulatory jurisdictions and coordinated among those jurisdictions.

The United States is somewhat unique in that insurance regulation has been primarily delegated to the states. In most countries, insurance is regulated at the national level and in a few (e.g., Canada and Australia) regulatory responsibilities are divided between the states/provinces and the national government.²¹ In the United States, the National Association of Insurance Commissioners (NAIC) serves as the primarily vehicle for coordinating regulatory policies among the states. The EU constitutes a special case in which there is a formal legal framework designed to establish a common set of standards and harmonise the insurance regulations of its member countries. At an international level, there are advisory organisations (such as the International Association of Insurance Supervisors) that seek to harmonise insurance regulation at a global level through the promulgation of core standards and principles.

The state-based system of insurance regulation in the United States has come under heavy criticism because of the inefficiencies it creates and the additional costs it imposes on insurance transactions across state borders.²² Large insurers have pushed for the creation of an optional federal charter (OFC) that would allow insurers and agents to choose to be subject to federal regulation and exempt from state regulation. Despite strong opposition from the states and small insurers, the OFC proposal received serious consideration by the Congress until the recent financial crisis refocused its attention on federal regulation of other financial institutions. The Congress is likely to remain preoccupied with reforming the overall structure for the regulation of financial institutions and essentially leave insurance "on hold" for some period of time with some limited exceptions.²³ However, it is reasonable to expect that policy-makers will revisit proposals for the federal insurance regulation as issues concerning the regulation of other financial institutions are resolved and a new financial regulatory framework is established.

²¹ In these countries, solvency regulation is handled at the national level and market conduct regulation is delegated to the states or provinces.

²² Grace and Klein (2009), Pottier (2011).

²³ In 2010, a Federal Insurance Office was established as one of the provisions of the Dodd-Frank Wall Street Reform and Consumer Protection Act. Its primary responsibilities will be to advise the Secretary of the Treasury on insurance issues, consult with the states on insurance matters of national and international importance, and monitor all aspects of the insurance industry. It will also have the authority to identify issues or gaps in the regulation of insurance that could contribute to a systemic crisis and to make recommendations to the Financial Stability Oversight Council as to whether an insurer should be subject to supervision by the Board of Governors of the Federal Reserve. It will also play a substantial role in coordinating federal efforts and policies on international insurance issues.

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Evaluation of current practices and potential reforms

Solvency regulation

Philosophy and approach

The approach to overseeing the financial condition and risk of insurance companies should be foremost in any discussion of regulatory policies. One can contrast two basic approaches to insurance solvency regulation: (1) a "prescriptive" or "rules-based" system; and (2) a "principles-based" system. In the United States, the various states have tended to apply a prescriptive approach to regulating insurers' financial condition that is heavily influenced by an accounting perspective. This is reflected in a voluminous set of laws, regulations, rules and other measures that govern insurers' financial structure and actions.²⁴ Regulators have tended to focus on insurers' compliance with these prescriptions rather than the prudence of their management and actions and their overall financial risk.

Unlike the United States, many European countries such as the United Kingdom have employed or are moving towards a principles-based approach to insurance regulation.²⁵ In such a system, emphasis is placed on insurers maintaining an adequate "solvency margin" and the competence and judgement of an insurer's management and actions with an insurer's financial risk being the ultimate point of focus for supervisors. Hence, regulators must pay close attention to how well insurers are managed and exercise significant discretion in the actions or interventions they may employ to correct practices or problems as they deem necessary. This approach should allow insurers greater freedom in managing their affairs as long as they use that freedom judiciously, do not engage in excessively hazardous ventures or transactions and ultimately keep their financial risk within reasonable bounds. This philosophy is embodied in the EU's collective insurance solvency initiatives that set common standards for all EU member countries.²⁶

Proponents of the prescriptive approach to insurance solvency regulation might argue that it is preferable to have a detailed set of rules to govern an insurer's financial structure and actions for which compliance can be readily determined. Their concern might be that too little emphasis on rules and too much emphasis on principles would give insurance companies too much discretion and some might abuse this discretion and take on excessive risk to the detriment of policy-holders and other creditors. The drawback of such an approach is that it potentially establishes a set of constraints that may not be optimal for a given insurer. Further, regulators are compelled to engage in a torturous process of amending and expanding their rules over time as circumstances change and new sources of financial risk arise.

²⁴ See, for example, Eling *et al.* (2009) for an assessment and comparison of U.S. and EU insurance financial regulation. Work on Solvency II continues as the European Commission and the European Insurance and Occupational Pensions Authority (EIOPA) address outstanding issues and finalise the technical specifications that will underlie Solvency II standards and practices. Associated reports and technical documents are available at *www.ec.europa.eu/internal_market/insurance/solvency/index en.htm* and *www.eiopa.europa.eu/.*

²⁵ See Tiner (2007).

²⁶ See Eling *et al.* (2007) and Elderfield (2009) for a more a detailed review of EU solvency initiatives.

Proponents of a principles-based approach might argue that it gives insurance companies greater flexibility in managing their financial risk according to certain established standards, and regulators can employ greater discretion in taking appropriate actions against insurers that take on excessive financial risk. They might also contend that this approach gives insurance companies greater incentives to manage their financial risk within acceptable parameters and the flexibility to do so. In theory, this approach would seem to be more efficient and properly focused on the overall financial risk of an insurer rather than its mere compliance with an arbitrary set of rules. However, in practice, the success of a principles-based approach depends heavily on the principles and standards that are set and the competence and motivation of regulators to take corrective action when it is warranted. Regulators in the United Kingdom would probably argue that they have met that test, although there have been some criticisms of how its Financial Service Authority has dealt with certain incidents.²⁷ As the Solvency II initiative is implemented, there will be an opportunity to see how well a principles-based approach works when it is employed on a wider scale.

It should be noted that regulators in the United States have taken steps in adopting some aspects of a principles-based approach and are increasing their emphasis on financial risk.^{28,29} As this process continues to evolve, insurance regulation in the United States may become a hybrid system that employs both elements of a rules-based approach and of a principles-based approach one. It will be interesting to see how well such a hybrid system performs compared to other systems.

Capital standards

Capital requirements constitute the linchpin for the financial regulation of insurance companies as well as banks. The capital requirements for insurance companies can take several forms. Prior to the 1990s, fixed capital requirements were common. During the past 15 years, most of the major developed economies have moved towards some form of risk-based approach to determining how much capital an insurer is required to hold for regulatory purposes.^{30,31} Using this approach, the regulatory capital requirements may be determined by simple or complex formulas or the use of internal or standard models.

In the United States, insurers are subject to fixed capital requirements set by each state as well as uniform risk-based capital (RBC) standards based on complex formulas promulgated by the NAIC that have been adopted by every state.³² There are different formulas for property-casualty, health and life insurance companies. In RBC formulas, selected factors are multiplied times various accounting values

²⁷ See, for example, European Parliament (2007).

²⁸ Vaughan (2009).

²⁹ Vaughan argues that "the optimal structure of insurance supervision is likely to be a combination of a rules-based and principles-based approach".

³⁰ ChandraShekar and Warrier (2007), Eling et al. (2009).

³¹ Also see Holzmüller (2009) for a comparison and critique of capital standards in the United States and European Union (Solvency II).

³² An insurer is required to have capital that meets or exceeds the higher of the two standards.

(e.g., assets, liabilities or premiums) to produce RBC charges or amounts for each item. The charges are summed into several "baskets" and then subjected to a covariance adjustment to reflect the assumed independence of certain risks. An insurer's calculated RBC amount is compared to its actual total adjusted capital (TAC) to determine its RBC position. Certain company and regulatory actions are required if a company's TAC falls below a certain level of RBC. Four RBC levels for company and regulatory action have been established, with more severe action required for companies as they reach lower levels.

Arguably, the U.S. approach to determining RBC requirements reflects both the heights and the limits to what can be achieved with a formula-based method. When first adopted, the U.S. system was considered relatively advanced when compared with how regulatory capital requirements were determined in other countries and a significant improvement over fixed capital requirements. However, over time, using static formulas to determine how much capital an insurer hold seems increasingly antiquated in light of the advances that have occurred in dynamic financial analysis (DFA) and the use of models to assess and manage insurers' financial risk.³³ In addition, accounting values can either be erroneous or manipulated to obtain more favourable regulatory assessments. For example, Cummins *et al.*¹⁰ observe that the property-casualty formula encourages insurers to lower their loss reserves to reduce the associated RBC charge.

Further, while not all risks can be quantified, the U.S. RBC formula omits some that can be, such as operational risks, using methodological tools now available. It is also important to note that the U.S. RBC formula contains no explicit adjustment for an insurer's size or its catastrophe exposure.³⁴ Factors for both were proposed in the initial development of the property-casualty RBC formula but were rejected. The NAIC is currently considering adding a catastrophe component to RBC for property-casualty insurers, but this initiative is bogged down in a debate that is unlikely to be resolved any time soon.

When the EU embarked on its mission to develop a common set of capital standards under its Solvency II initiative, it was positioned to take advantage of the advances in risk analysis and modelling that have occurred. The primary goal of Solvency II is to develop and implement harmonised RBC standards across the EU. The intent is to take an enterprise risk-management (ERM) approach towards capital standards that will provide an integrated solvency framework that covers all significant risk categories and their interdependencies.

Solvency II consists of three pillars: (1) quantitative requirements, (2) qualitative requirements and supervision, and (3) supervisory reporting and public disclosure. The quantitative requirements under Pillar 1 include the valuation of assets and

³³ In 2000, the NAIC introduced a model-based component to assess the interest rate risk associated for fixed annuities. In 2005, this approach was extended to assess the market risk, interest rate and expenserecovery risk of variable annuities.

³⁴ Based on the current formulas, an insurer's RBC requirement increases proportionately with the amount of its premiums, assets and loss reserves. However, arguably, according to the "law of large numbers", an insurer's risk does not increase proportionately with its size. With a size adjustment, a small insurer would have a higher *relative* RBC requirement than a large insurer, all other things equal.

liabilities, technical provisions, own funds, regulatory capital requirements and investments employing a total balance sheet approach with market-consistent valuation of assets and liabilities. There will be two levels of regulatory capital requirements. The first level is the minimum capital requirement (MCR), which is the minimum amount of equity capital that an insurer must hold. An insurer that failed to meet its MCR would be subject to immediate regulatory intervention. The second level is the solvency capital requirement (SCR), also called "target capital", which is intended to represent the economic capital an insurers needs to conduct its business within a given safety level. In determining SCR, all significant risk categories are covered, including insurance, market, credit and operational risk. Furthermore, risk mitigation techniques applied by insurers (such as reinsurance and securitisation) are considered. An insurer that falls between its MCR and SCR *may be* subject to regulatory action based on regulators' determination of whether corrective steps are warranted. MCR will be a fraction of SCR, although the precise value has yet to be determined.

EU regulators are considering the use of both standard and internal models to calculate MCR and SCR. The advantage of a standard model is that it may be less burdensome for insurers because it will not require them to invest the resources that would be needed to develop an internal model that would be specific to each firm. An internal model would be developed by an insurer to better fit its particular circumstances and needs subject to certain parameters established by regulators. Large insurers will probably be more likely to opt for an internal model while small and medium-sized insurers may be more likely to adopt a standard model because of resource considerations. It should be noted that an insurer will need regulatory approval to be allowed to use an internal model to determine its capital requirements.

A model-based approach to determining regulatory capital requirements for insurance companies has the potential of being superior to a formula-based approach. A model-based approach has the desirable attributes of compelling insurers to take a more forward-looking and comprehensive view of their financial risk and determining a regulatory capital amount that is better tailored to fit a particular insurer's specific needs and circumstances. Many large insurers are already performing capital modelling and incorporating ERM practices in their risk management activities. Hence, a model-based approach would seem most consistent with the regulatory goal of employing best practices to ensure that regulatory policies and standards are effective and efficient.

At the same time, this argument has some qualifiers. Even the most sophisticated approaches to capital modelling are imperfect and their performance is dependent on a number of factors including model inputs and assumptions.^{1,35} Further, compelling insurers to use models to determine their capital requirements will require them to invest in additional resources that could be costly, especially for insurers who are not

³⁵ Vaughan (2009) asserts that internal models should be an adjunct to a rules-based capital requirement that establishes a floor for the amount of capital that an insurer would be required to hold for regulatory purposes.

currently using capital models. In addition, a model-based approach places additional demands on regulators in terms of developing reasonable standards and evaluating insurers' model results. Sceptics might argue that some insurers that would be allowed to use internal models might use this freedom to "game the system" and take on excessive risk. Finally, there is the risk that regulators will rely too heavily on capital requirements and not give adequate attention to other components of a sound and comprehensive financial regulatory system.

It also should be noted that while many analysts view that the approach to setting capital standards in the EU's Solvency II initiative is superior to the current U.S. RBC formulas, the EU approach is not immune to criticism. Holzmüller³⁶ compared and evaluated U.S. RBC, Solvency II and the Swiss Solvency Test based on 11 criteria. She concluded that U.S. RBC only partially satisfied three of the criteria and that Solvency II fully satisfied three of the criteria and partially satisfied the remaining eight criteria. With respect to Solvency II, she highlighted concerns with respect to factor-based calculations within parts of the standard approach (model), the use of the value-at-risk concept, which does not incorporate the distribution of costs in the event of insolvency, and inadequate consideration of management risk.

Investments

Insurers must properly manage their investments (i.e., assets) to support their obligations to policy-holders. This involves a proper balance of risk and return consistent with the mission and appropriate risk profile of an insurance company. While capital requirements consider the risk embedded in an insurer's asset portfolio, it is prudent for regulators to take additional steps to ensure that insurers are properly managing their investments and are not overly invested in high-risk assets.

The regulation of investments can take two forms that are not mutually exclusive. One approach is to promulgate a set of rules and constraints that deter an insurer from investing too heavily in high-risk assets. A second approach is to require insurers to develop and implement prudent investment policies. One can see both approaches in U.S. regulations governing insurers' investments.

The NAIC has several model laws/regulations that pertain specifically to investments. One is the Investments of Insurers Model Act (Defined Limits Version). A second is the Investments of Insurers Model Act (Defined Standards Version). The latter is intended to take more of a prudential and principles-based approach to regulating insurers investments while the former is more rules-based or prescriptive in terms of setting specific limits and other rules that govern insurers' investments.

Both model laws contain provisions concerning insurance company practices in managing its investment portfolio. For example, they require that an insurer's board of directors adopt a written plan for acquiring and holding investments and related activities. The model acts further stipulate procedures that the board of directors should follow in managing an insurer's portfolio.

The defined limits model act contains several provisions that are illustrative of a prescriptive approach. Specifically, it prohibits a life insurer from holding more

³⁶ Holzmüller (2009).

than 20 per cent of its admitted assets in medium and lower grade investments with a 10 per cent limit for lower grade investments, a 3 per cent limit for Securities Valuation Office Class 5–6 investments and a 1 per cent limit for Class 6 investments. There are other provisions that set rules and limits with respect to mortgage loans and real estate. Investments in derivatives for "income generation" are limited to 10 per cent of a life insurer's admitted assets (the limit for propertyliability insurers is 7.5 per cent).

The defined standards model act contains fewer specified limits and more provisions concerning how an insurer is expected to manage its investments and the associated risks. Similar to the defined limits act, it stipulates the role and responsibilities of the board of directors in managing an insurer's investments "prudently". It goes on to list "prudence evaluation criteria" that regulators may consider in assessing the adequacy of an insurer's investment management. Interestingly, these criteria include "systemic risk". It also provides for a "minimum financial security benchmark" (MFSB) that authorises regulators to require an insurer to hold more capital than that required under RBC and fixed minimum capital standards. It also sets a "minimum asset requirement", which is the sum of MFSB and an insurer's liabilities. Additionally, it contains limits for specified asset classes that in some cases are the same as in the defined limits act and in other cases appear to be more liberal. The model act does not appear to impose a specific limit on derivative investments other than those implicitly contained in other provisions.

As noted above, those insurers that have been subject to a limit on their holdings of derivative instruments for income generation purposes (either by New York or other states) may have ultimately benefitted from this constraint if it prevented them from investing more heavily in assets exposed to the implosion of the housing market. Looking forward, U.S. regulators may contemplate even stricter limits tied to the type of collateral underlying asset-backed securities. Some may view this as being a more reliable approach than promulgating general principles and standards that further guide an insurer's investments in these securities. Of course, these approaches are not mutually exclusive and both could be included in revised investment regulations. Regardless, U.S. regulators need to revisit their supervision of insurers' investment practices in line with the lessons learned from the most recent crisis.

One problem revealed by recent events was over-reliance on credit rating agencies' assessment of the default risk associated with mortgage-backed and asset-backed securities. Many of the securities backed by subprime mortgages were given investment-grade ratings despite the much higher risk associated with these securities. This underlies the need for regulators and insurers to undertake their own assessment of the risks associated with these types of securities. Regulators should take the initiative and "reclassify" investments as to their credit quality if the rating agencies have underestimated their default risk. This kind of initiative has implications beyond the regulation of investments *per se*, as the reclassification of the credit quality of certain assets would also affect the capital requirements for an insurer and financial monitoring systems.

Under Pillar 1 of the Solvency II directive, quantitative investment limits and asset eligibility will be eliminated. The rationale given for this step is threefold: (1) the new

valuation standards take due account of the credit and liquidity characteristics of assets; (2) SCR captures all quantifiable risks; and (3) all investments are subject to the "prudent person" principle. If new risks emerge that are not covered by SCR, the European Commission has the authority to adopt temporary investment limits and asset liability criteria while the standard formula is being updated. The elimination of investment restrictions would likely be considered a bold step by U.S. regulators. Critics of such a policy might argue that it relies too heavily on capital models and regulators' enforcement of "prudent person" principles.

Financial reporting and monitoring

The monitoring of insurers' financial condition and risk should be an important component of any regulatory system. It is essential to ensure that insurers are complying with the principles, standards and rules that have been promulgated by regulators and that regulators take prompt corrective actions against insurers that incur excessive financial risk or are in financial distress.

Financial monitoring encompasses a broad range of regulatory activities, including financial reporting, early-warning systems, financial analysis, examinations and other measures intended to assess an insurers' financial condition and the management of its financial risk.³⁷ In the United States, insurers file annual and quarterly financial statements, which serve as the principal sources of information for the solvency monitoring process, but a number of other special reports are filed and used in regulatory monitoring. Accounting rules take on added importance because accounting values become the principle measures that determine whether an insurer is complying with regulatory standards.³⁸ Regulators also have broad authority to compel insurers to provide other information deemed necessary to assess their financial condition.

U.S. regulators subject the reports filed by insurers to a "bench" or "desk" audit by an in-house financial analyst or examiner who assesses the information's accuracy and reasonableness and determines whether an insurer requires further investigation. Typically, an insurer's domiciliary regulator performs the most extensive review of its financial information, but an insurer must file financial reports with every state where it is licensed, and non-domiciliary regulators also may review these reports. Additionally, the NAIC scrutinises insurers' financial statements and disseminates its analysis to state insurance departments. This reflects the multilayered nature of financial regulation and monitoring of U.S. insurers—the domiciliary regulator constitutes the first layer, and non-domiciliary regulators and the NAIC constitute successive layers. Some might question whether this multilayered regulation and monitoring is redundant, but in the U.S. system it is viewed as essential to assure that domiciliary regulators are taking appropriate actions against insurers in financial distress.

³⁷ See Klein (2009) for a more detailed discussion of the financial monitoring of insurance companies in the United States.

³⁸ In the United States, insurance companies are subject to Statutory Accounting Principles that are consistent with GAAP in many areas but differ in some respects.

State regulators rely heavily on early-warning systems and other financial analysis tools in their monitoring activities. The fact that U.S. RBC standards are relatively low makes financial monitoring particularly important because an insurer could be in financial distress and still exceed its RBC requirement. For the most part, these systems and tools are based on static, quantitative financial ratios. There is some use of qualitative information, but this appears to be limited and also may vary among the different states. Two principal early warning systems are employed in the United States: the Insurance Regulatory Information System (IRIS) and the Financial Analysis Solvency Tools (FAST) system. IRIS comprises 12–13 financial ratios (depending on the type of insurer), and its results are made available to the public. Normal ranges are set for each ratio. Ratio results that fall outside these ranges and other criteria can trigger further regulatory investigation.

In the early 1990s, U.S. regulators concluded that IRIS was inadequate, which led to the development of the FAST system. In the NAIC's explanation of its systems, FAST comprises the full array of its solvency monitoring tools (including IRIS), but its heart is a computerised analytical routine called the "scoring system". The scoring system consists of a series of approximately 20 financial ratios based on annual and quarterly statement data, but, unlike the IRIS ratios, it assigns different point values for different ranges of ratio results. A cumulative score is derived for each company, which is used to prioritise it for further analysis. These scores are provided to all regulators but are not available to the public.

U.S. regulators use additional tools and information in their financial monitoring activities. They can use the NAIC's "Insurer Profiles System" and may also develop their own customised financial ratios. Both periodic (every three to five years) and targeted company financial examinations are conducted; targeted exams are performed to address specific questions or concerns that arise from bench audits and analysis. Additional sources of information may be tapped, including Securities and Exchange Commission filings, claims-paying ability ratings, complaint ratios, market conduct reports, correspondence from competitors and agents, news articles, and other sources of anecdotal information. While a wide array of information sources are available, it appears that U.S. regulators rely primarily on quantitative data and tools, as well as financial examinations. This is consistent with a prescriptive, rules-based approach as most rules are stated in quantitative terms. Importantly, U.S. regulators tend not to engage in consultations with an insurance company's management to assess its competence and future plans.

Only three studies have tested the "predictive accuracy" of both the IRIS and FAST systems. Prediction refers to the ability of these systems to identify insurers that ultimately fail (are seized by regulators) and those that do not. These studies also have included insurers' RBC ratio (i.e., the ratio of Total Adjusted Capital to the Authorised Control Level RBC amount) as an additional explanatory variable, although insolvency prediction is not its purpose. These studies have generally found that the IRIS/FAST systems are reasonably effective in the sense that they contribute significantly to models designed to predict insurer failures. At the same time, these studies have found that these systems could be improved by recalibrating the FAST scoring model and adding more variables and components to these systems, including financial strength ratings and some form of cash flow

testing.^{39,40} It should be noted that these studies judge the NAIC early warning systems by past performance. Hence, they cannot assess their effectiveness based on new problems or risks that are not reflected in the sample data periods used.

The cash flow simulation used by Cummins *et al.*³⁹ comes closest to employing some form of DFA in early warning systems; its significant explanatory power in insolvency prediction tests lends support to its consideration in determining capital adequacy and financial monitoring. It is difficult to estimate the effect of using more qualitative methods and information, as these things do not lend themselves as easily to empirical testing. The predictive value of claims-paying ability ratings comes closest to indicating the potential contribution of qualitative analysis, which is a part of the rating process.

This brings us to the issue of how existing monitoring systems detect the kinds of problems or risks that insurers are now encountering. As discussed above, the IRIS and FAST systems use relatively broad indicators that tend to lag behind actual events. Arguably, a number of these measures address areas generally relevant to the financial crisis but none specifically focus on the most relevant items. For example, both systems contain measures of capital adequacy, leverage, financial performance and investments. The ratio of non-investment grade bonds to assets and investment yield are used to identify concentrations of high-risk assets. However, these measures only crudely indicate insurers' exposures to losses from mortgage-backed securities or subprime mortgages. If insurers' reporting requirements are enhanced to provide better information on the credit quality of their assets, the additional data could be used to improve early warning systems.

Regulators may modify or add measures in an effort to fill this gap. Essentially, any figures reported by insurers are fair game in terms of developing new financial structure/risk measures. Because it is a public system, changes to IRIS tend to occur less frequently. In contrast, because FAST is not public, regulators are able to modify it more easily and frequently. Looking more broadly, other methods used for analysing insurers' financial risk offer additional opportunities for risk assessment. For example, stress testing of life insurers' policy reserves could be expanded to other areas and risk exposures. Further improvements in the financial monitoring systems used by U.S. regulators are warranted if this component of solvency regulation is to adhere to the principle that regulators should employ the most efficient and effective means to remedy market failures.

It should be noted that the NAIC acknowledges some of these deficiencies and is taking steps to address them. For example, in 2004 it adopted the Risk-Focused Surveillance Framework, which has four components: (1) risk-focused exams; (2) off-site risk-focused financial analysis; (3) examination of internal and external changes in the organisation; and, (4) an annual supervisory plan for each insurer developed by its domiciliary regulator.⁴¹ While this initiative is laudable in concept, it is difficult for external observers to assess its success. Arguably, it would constitute a significant shift

³⁹ Cummins et al. (1999).

⁴⁰ Pottier and Sommer (2002).

⁴¹ See Vaughan (2009) for more discussion of this initiative.

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from the paradigm that has characterised the U.S. approach to financial surveillance historically. With time and strong encouragement by the NAIC, its objectives may be fully realised as regulators develop the capacity and mindset necessary for this to happen.

The NAIC is considering other initiatives that might be encompassed under the broad definition of financial monitoring. One of these initiatives would be the introduction of something akin to the Own Risk and Solvency Assessment that is an element of Pillar 2 under Solvency II. Another initiative is to increase the focus on corporate governance. These would be significant enhancements to U.S. financial monitoring and could substantially increase the use of qualitative methods to assess how well an insurer is managing its financial risk.

Intervention

Intervention might be viewed as the final step in the regulatory process. Intervention could be broadly defined as any specific action by regulators to force an insurer to alter its behaviour, transactions or structure. This could mean bringing an insurer into compliance with existing regulations or going beyond regulations to achieve some desired outcome.

There are two categories of regulatory actions with respect to troubled companies in the United States: (1) actions to prevent a financially troubled insurer from becoming insolvent; and (2) delinquency proceedings against an insurer for the purpose of conserving, rehabilitating, reorganising or liquidating the company. Some of these actions may be conducted informally; others require formal measures. Similarly, some actions against companies may be confidential, and others may be publicly announced. Regulators can negotiate sales or mergers of troubled insurers in order to avoid market disruptions. This is often more feasible for life-health insurers because of the embedded value of their long-term contracts.

If preventive regulatory actions are too late or are otherwise unsuccessful and an insurer becomes severely impaired or insolvent, then formal delinquency proceedings will be instituted. These measures can encompass conservation, seizure of assets, rehabilitation, liquidation and dissolution. For many insurers, these actions are progressive. A regulator may first seek to conserve and rehabilitate a company to maintain availability of coverage and to avoid adverse effects on policy-holders and claimants, as well as lower insolvency costs. The regulator, however, ultimately may be forced to liquidate and dissolve the company if rehabilitation does not prove to be feasible. This is often the case with property-casualty insurers that have already dug themselves into a deep hole by the time regulators seize control.

One question that is difficult to answer is how much leverage regulators can exercise in compelling an insurer to lower its financial risk if it greatly exceeds its regulatory capital requirement and complies with all regulations from a quantitative perspective. In theory, U.S. regulators can act against any company deemed to be in "hazardous financial condition". However, regulators would bear the burden of proof if an insurer resisted corrective action that ultimately would have to be resolved in court. In practice, when regulators initiate formal actions, an insurer's problems are sufficiently obvious that the courts typically approve such actions. What we cannot observe is regulators' power and inclination to impose their will in informal actions that are not subject to public disclosure.

This brings us back to the orientation of regulators and their authority. A greater reliance on rules rather than principles may cause regulators to refrain from actions that go beyond enforcing compliance with specific regulations. In a principles-based system guided by a prudential philosophy, regulators may exercise greater discretion and take actions whenever they believe a company is not properly managing its financial risk. U.S. regulators may believe that they can exercise this kind of discretion if they choose to do so. The questions lie both with their authority and inclinations.

This discussion has some bearing on the role that regulation can play in mitigating insurers' vulnerability to systemic risk. To the extent that existing or new regulations fail to prevent an insurer from incurring excessive financial risk in its investment decisions, then regulatory discretion could become a key factor. If regulators are authorised and inclined to constrain what they consider to be imprudent or risky behaviour, this could strengthen regulatory enforcement of company risk management practices and reduce their vulnerability to systemic risk. However, some insurers may oppose such regulatory discretion, especially if it is not governed by guiding principles and standards. This issue warrants consideration in contemplating changes to the U.S. regulatory system and how rules and principles will be used.

Price regulation

Price or rate regulation is the second area that deserves some discussion. In the United States, the extent and stringency of rate regulation varies significantly by line and by state. The lines subject to the greatest rate regulation are personal auto, homeowners, workers' compensation and health insurance. The reality is that in most states and markets, at a given point in time, regulators do not attempt to impose severe price constraints. The problem arises when strong cost pressures compel insurers to raise their prices and regulators resist market forces in an ill-fated attempt to ease the impact on consumers.⁴² Inevitably, severe market distortions occur. Ultimately, insurance markets can be sucked into a "downward spiral" as the supply of private insurance evaporates and state mechanisms are forced to cover the gap. Rate suppression also can decrease incentives to reduce risk that can lead to rising claim costs that further increases pricing and market pressures. Together, these developments can create major crises in the cost and supply of insurance.

One example of where rate regulation has gone awry is homeowners insurance in Florida where this is a substantial exposure to hurricanes. Florida regulators have imposed tight constraints on homeowners insurance rates since Hurricane Andrew struck the state in 1992. As a consequence, many large national insurers have exited the market or substantially reduced the amount of homeowners insurance they write.

⁴² Regulators may seek to suppress overall rate levels and/or compress rate differentials between low and high-risk insureds.

They have been replaced by a large number of small, single-state or regional insurers with most of their exposures concentrated in Florida. The number of policies in the residual market for property insurance (the Citizens Property Insurance Corporation) has grown from approximately 400,000 in 1993 to more than 1.3 million in March 2011.

The argument for rate deregulation is fairly straightforward. One would expect that prices in competitive insurance markets would be "actuarially fair" and not excessive. In addition, competition should drive insurers to be efficient and prices should gravitate to the lowest possible level necessary to cover the cost of an efficient insurer, including its cost of capital or a "fair" profit. If one accepts the notion that competitive prices are desirable and insurers will charge such prices in the absence of government intervention, then there is no need for rate regulation if insurance markets are competitive. The empirical research overwhelmingly confirms both the competitive nature of insurance markets and the lack of benefits from rate regulation as discussed in the section "Economic principles for insurance regulation". Requiring or authorising regulators to regulate rates invites political pressure and interference that can lead to the dismal scenario described above. Hence, the further deregulation of insurance pricing in the United States seems warranted and would enable regulators to allocate more resources to address true market failures.

Rate regulation was common in the EU until 1994 when it was essentially eliminated with the introduction of the Third Generation Insurance Directive. Some member countries, however, still regulate other factors that indirectly affect insurance prices. An example is the automobile insurance bonus-malus system in France.⁴³ While auto insurance rates are not explicitly regulated, the premiums are adjusted by a bonus-malus coefficient (set by law) that considers a driver's past experience. This type of regulation of rating factors may be less intrusive than full price regulation, but one might question if it is really necessary in competitive insurance markets. Nonetheless, the EU appears to have moved closer to the desirable goal of full price deregulation than the United States.

Market conduct

As discussed in the section "Economic principles for insurance regulation", a stronger case can be made for some regulation of market conduct in insurance that involves both insurance companies and their intermediaries. In the United States, the concern lies less with the scope of market conduct regulation and more with the methods used to regulate market conduct. Currently, the states subject insurers to extensive, duplicative and costly examinations that focus too much on minor errors and too little on major patterns of abuse. In other words, regulators "miss the forest for the trees". Regulators also fail to recognise and encourage insurer self-compliance efforts. Klein and Schacht⁴⁴ discuss the problems with the current system and suggest a more effective and efficient approach to market conduct monitoring that would maximise

⁴³ Dionne (2001).

⁴⁴ Klein and Schacht (2001).

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reliance on self-regulatory mechanisms and target regulatory investigation and enforcement to significant problems.

Summary and conclusions

An effective and efficient regulatory system for insurance should be guided by a set of principles that are well grounded in economic theory. The economic foundation for regulation is based on the presence of market failures. The market failures that are most evident in insurance include severe asymmetric information problems and principal-agent conflicts that could lead some insurance companies to incur excessive financial risk and/or engage in abusive market practices that harm consumers. Insurance consumers, particularly individuals and households, face significant challenges in judging the financial risk of insurers and properly understanding the terms of insurance contracts.

These types of market failures support an argument for regulating insurers' financial condition and some aspects of their market conduct. With respect to solvency, regulators should seek to prevent insurers from incurring excessive financial risk and limit the cost of insurer insolvencies. As for market conduct, regulators should take steps to discourage and sanction insurers and intermediaries that take unfair advantage of consumers, such as misrepresenting the terms of insurance contracts and failing to pay legitimate claims. There appears to be little justification for the regulation of insurance prices in competitive markets in which entry/exit barriers are low or non-existent.

However, not all market failures can necessarily be corrected by regulation so that the end result will be an increase in social welfare. The desirability of any particular regulatory intervention must be assessed in terms of regulators' ability to remedy a specified market failure and any deadweight costs associated with regulatory intervention that may exceed the benefits from intervention. Further, regulators should employ "best practices" and the most efficient measures to address market failures. Ultimately, regulators have to balance the benefits and costs of specific regulatory policies and methods to maximise the net gains from any regulatory intervention. Applying these principles in evaluating current regulatory practices leads to the following conclusions.

Both the United States and the EU have fairly robust systems for regulating the financial condition of insurance companies, although they differ in philosophy and approach. Financial regulation in the United States could be improved by adopting more advanced methods. The EU Solvency II initiative embraces more advanced methods and has the potential for creating a more effective and efficient system for regulating insurer solvency. Its success in this endeavour will be determined as it reaches the implementation stage and all the necessary components for a comprehensive regulatory scheme are developed.

It is unlikely that the United States will adopt the kind or regulatory system envisioned in Solvency II in the foreseeable future but there are specific improvements that could be made that are politically feasible. First, U.S. regulators should critically review its prescriptive requirements and consider where it can adopt more principles-based standards that will not compromise the goal of preventing insurers from incurring excessive risk. The NAIC has indicated a willingness to consider adopting more principles in its regulatory scheme; the issue lies with how fast and far it is willing to go. Regulatory reform in the United States has always been an incremental process and it will need to move forward with "all deliberate speed" if U.S. regulation is going to keep pace with the reforms in other advanced economies.

The United States also needs to significantly revamp its capital standards. As a first step, it needs to update the parameters of its RBC formulas and incorporate elements for catastrophe risk and operational risk. The NAIC also needs to push ahead with its efforts to use models in assessing capital adequacy. Acknowledging that U.S. regulators are uncomfortable with the full-scale replacement of the existing RBC formulas with standard or internal models there are other things that could be done. Specifically, the NAIC could develop and test a standard model as an adjunct to its formula-based capital requirements. Standard model results could be used, along with company internal model results, in financial monitoring. Used in this way, regulators would not be bound by model outcomes for determining whether an insurer has adequate regulatory capital but could use model results to help identify high-risk insurers.

In the area of investments and financial monitoring, U.S. regulators need to fully embrace and implement a risk-based approach to assessing insurers' financial condition. They should also increase their use of qualitative methods to evaluate corporate governance and how well an insurer is managing its financial risk. An overarching goal of these kinds of initiatives is to encourage insurers to employ good risk management practices. With respect to investments, regulators need to revisit investment limits, prudential standards and the reliance on rating agencies for determining the credit quality of derivative instruments such as mortgage-backed securities.

The states also should deregulate pricing in all competitive markets. This will be a formidable goal as many states believe price regulation is warranted or are under significant political pressure to constrain rate levels and rating factors. The NAIC could play a greater leadership role in this effort by strongly encouraging price deregulation and advocating its benefits.

With respect to market conduct, a good argument can be made for regulatory intervention to prevent insurers and agents from engaging in unfair practices that harm consumers. However, the form in which market conducts regulation must be efficient. Specifically, regulators should avoid excessive reliance on costly and duplicative market conduct exams that focus too much on findings and penalising minor errors. Instead, regulators should focus on detecting major patterns of abuse and outright fraud. They should also encourage and reward self-compliance efforts by insurers.

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Government-sponsored Natural Disaster Insurance Pools: A view from downunder

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Review article

Government-sponsored natural disaster insurance pools: A view from down-under

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ABSTRACT

In the light of the rising cost of natural disasters we review the provision of catastrophe insurance by the public sector in the US, France, New Zealand, Spain, the United Kingdom, and its absence in the Netherlands, where flood risk is viewed as a national security concern. We do this in the context of the Australian home insurance market where insurers increasingly employ risk-reflective, multi-peril premiums as new technology allows them to better understand their exposure to risk. Motivations behind government pools vary by country, as do hazard profiles. In the US, for example, pools have usually arisen in the face of market failure of private sector insurance following a significant natural disaster; the initial concern has been the provision of affordable insurance rather than disaster risk reduction. Government pools have certain advantages over the private sector including their ability to raise funds post-event, but face financial unsustainability given political intervention to maintain affordability of cover in high-risk areas. In Australia, it is too early to judge whether risk-based premiums are leading to better land-use planning and increased mitigation spending, but in the case of northern Australia, a region that faces flooding and tropical cyclone risks, rising premiums are causing concern in Government. Nonetheless, the corollary seems self-evident, i.e. in the absence of transparency about the cost of risk, there is no incentive on the part of homeowners, local councils or land developers to improve the 'riskscape'; insurers are the only actors with immediate financial incentives to acknowledge these risks.

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1. Introduction

Dealing with the threat of natural perils in ways that increase the resilience of communities poses a difficult policy area for government. Australia, like other jurisdictions, is episodically impacted by natural disasters from a wide range of perils [15]; in fact six different peril categories are responsible for the top 10 normalised insurance losses (Table 1). Much of the damage in such events is self-inflicted in the sense that the outcomes are heavily modulated by where and how we choose to live. If we take the case of flood, for example, on Wednesday, 5 March 1819, in the fledgling years of the Australian colony, the then Governor of New South Wales, Lachlan Macquarie, felt moved to issue a Government and General Order to be read in every church and chapel in Australia for the three ensuing Sundays. This followed large floods in the Hawkesbury River catchment near Sydney, a river system that continues to pose a significant threat to much larger populations today. The Governor criticised new settlers [for if it had not been for their]:

wilful and wayward Habit of placing their Residences and Stockyards within the Reach of the Flood (as if putting at Defiance that impetuous element which it is not for Man to contend with), many of the deplorable losses which have been sustained within the last few years at least, might have been in great Measure averted [13].

Essentially there are two primary ways of reducing the direct economic costs of catastrophic events: either by way of mitigation¹ measures, or by reducing the financial impact on those directly affected with the sharing of costs among a wider population through government and/or charitable aid, or insurance. Government aid comes often in the form of post-event appropriations that can create budgetary difficulties and disincentives for mitigation [8,34,60,59]. This being the case, most advanced economies rely on insurance to fund a significant portion of disaster recovery and to diversify this risk through international reinsurance markets. Reinsurance, the insurance of insurance companies, has the added benefit of providing financial resources external to the local economy; this has been an important factor in the reconstruction of Christchurch following the destruction due to the 2010-2011 earthquake sequence, an event to which we will return in our discussion of New Zealand's Earthquake Commission (EQC).

Our study was motivated by questions about the role of government in the provision of catastrophe insurance and the potential for the insurance sector to be a positive actor in reducing the economic costs of natural disasters [50]. Both questions had high currency in Australia after the 2011 Queensland and Victorian floods, events that led to widespread public and political criticism of many insurers for their then failure to cover riverine flood damage [70]. Australian insurers have since responded by broadening coverage, so that as of May 2015 over 90% of homeowner's policies cover this peril [59]. This change has been possible largely because of the increased disclosure of flood mapping commissioned by local councils and the processing of these data in ways to allow for better risk identification [47,33,59].

The Australian experience in respect of flood insurance is just one manifestation of how advances in the use of Geographic Information Systems, remote sensing and simulation modelling are changing insurers' ability to understand and price their exposure to risk [52,74,75,29,55]. As a result of improving intelligence, private sector insurers may choose to offer cover only at rates far in excess of what those consumers were paying in the past, or even to withdraw from areas deemed too high risk [7]. At the time of writing this is an issue in northern Australia, a region prone to tropical cyclones and episodic flooding, and where premiums have risen to better reflect these risks [5]; the government has responded to public concern by convening a taskforce (The Northern Australia Insurance Premiums Taskforce: http://jaf.ministers.treas ury.gov.au/media-release/024-2015/) to explore how premiums can be reduced; one of the mechanisms under consideration is a government-sponsored tropical cyclone reinsurance pool, like those evaluated in this study.

With this in mind we scrutinise various government-sponsored natural disaster insurance pools (sometimes called residual market mechanisms and hereafter Government pools or pools) in the US, New Zealand, Spain and France, as well as arrangements under consideration in the UK and their absence in The Netherlands. In ignoring pools in Japan, Scandinavia, Switzerland, Taiwan and Turkey, amongst others (see [46]), our survey makes no claim to be exhaustive. However it samples from the spectrum of possible arrangements and highlights certain challenges that beset all of them in dealing with the rising cost of natural disasters [63]. Following a brief overview of the various pools examined, subsequent discussion centres upon three questions: How do the pools price risk? How are deficits funded? Do the pools encourage disaster risk reduction? We then draw upon some illustrative examples from recent Australian experience of the role played by poor land-use planning in amplifying the cost of natural disasters and conclude with some discussion on the capacity of the insurance industry to help overcome this problem.

Lastly by way of introduction, *risk* in this paper refers to the financial risk defined as a multivariate function of: *hazard attributes* – for example, the frequency of landfalling tropical cyclones with peak gust speeds in excess of thresholds likely to cause property damage; *exposure* – the spatial distribution of insured assets and their values; and *vulnerability* – the cost of damage as a fraction of the insured or replacement value for a given hazard intensity. This conceptual framework underpins all catastrophe loss modelling that is now standard practice in the insurance industry to help inform its purchase of reinsurance, capital needs and increasingly, premium pricing [72]. In other contexts, risk has behavioural dimensions [62] but these are not considered here.

2. Brief overview of selected Government-sponsored disaster insurance pools

2.1. US pools

Since US pools have attracted significant scholarship (e.g.

Table 1

Top 10 Australian normalised (2014–2015) insurance sector natural disaster loss events. Normalised losses refer to the estimated insurance cost of historical hazard events if they were inflicted upon current society. The normalisation adjusts original losses for changes in building numbers; the average nominal value of new buildings since the time of the original event; and for the increased resilience of newer buildings in tropical cyclone-prone parts of the country (updated from [15]).

Rank	Year	Event	Cost (Millions AUD)
1	1999	Sydney Hailstorm	4475
2	1974	Tropical Cyclone Tracy	4178
3	1989	Newcastle Earthquake	3834
4	1974	Brisbane Floods	2701
5	2011	Queensland and Victorian Floods	2506
6	1983	Ash Wednesday Bushfires (Wildfires)	2371
7	1985	Brisbane Hailstorm	2046
8	2007	Pasha Bulker East Coast Low Storm	1966
9	1973	Tropical Cyclone Madge	1520
10	1990	Sydney Hailstorm	1433

¹ Here we refer to *mitigation* in its traditional sense of precautionary risk-reduction measures rather than reducing greenhouse gas emissions as in the parlance of climate change.

[9,34,35,39,42–45]), the following introductory sketches are kept short. To the degree that their attributes and management shed light on the particular questions of interest to our study, we describe these in more detail in Sections 3 through 5.

With the exception of nationwide flood cover provided by the *National Flood Insurance Program* (NFIP), it is the individual State (c.f. Federal responsibility) that controls its own catastrophe insurance market. NFIP, administered by the Federal Emergency Management Agency (FEMA), was created in 1968 following the withdrawal of private insurers after large losses incurred during Hurricane Betsy (1965). An important feature of NFIP is that flood cover not only encompasses riverine flood damage but also that caused by hurricane-induced storm surge. It is the latter peril that, in large measure, has been responsible for NFIP's current large deficit (see later discussion).

The Texas Catastrophe Property Insurance Association was established as a government pool offering last resort windstorm and hail insurance in 1971 following large losses in Hurricane Celia (1970). In 1997, the program was renamed the **Texas Windstorm Insurance Association (TWIA)**. All Texas property and casualty insurers are required to participate and represent eligible property owners in the 14 coastal counties along the Gulf Coast and parts of Harris County. Losses in excess of revenue are paid by the **Catastrophe Reserve Trust Fund (CRTF)**, which was established in 1993 to manage TWIA's revenue and liability, reinsurance and public securities.

Florida suffered a crisis in the availability of property insurance in the late 1960s at a time when residential property mortgage finance was conditional on insurance cover and many homeowners were threatened with mortgage default. In response the State Legislature mandated in 1970 that insurers participate in the Florida Windstorm Underwriting Association (FWUA) programme to provide affordable (not risk-rated) homeowner cover for catastrophic windstorm events in high-risk areas along the Florida coastline. (The conflict between affordability and high-risk emerges as an issue faced by many of the pools examined in this study.) To increase capacity, the FWUA merged in 2001 with the Joint Underwriting Association (JUA), a temporary programme established by the Legislature to provide short-term cover to policyholders planning repairs for damage incurred during Hurricane Andrew (1992), and from this merger *Citizens*, an entity with tax-exempt status and securities, was created [14].

Citizens is funded by premiums, regular assessments² on insurers, government and agency securities, corporate bonds, municipal bonds and private sector securities. Shortfalls are covered by policyholder surcharges, emergency assessments and bond issues. Insurers of private property are also required to participate in the *Florida Hurricane Catastrophe Fund* (FHCF), which was established in 1993 to provide low-cost reinsurance cover for future hurricane losses [24]. This has the effect of further concentrating Florida's hurricane risk within the state rather than diversifying it around the world. The FHCF has recently begun to purchase some external risk transfer products such as reinsurance; nonetheless, in the foreseeable future the FHCF will hold a large proportion of its claims paying capacity in the state from accumulated cash and bonding.

In contrast to mortgage lender requirements for windstorm cover in Florida (and for flood nationally for Federally-backed home loan mortgages), earthquake insurance in California has not been a requirement for mortgage finance. Despite the fact that since 1985 residential insurers had been required to offer

earthquake cover to all prospective policyholders, only a third of homeowners in the area impacted by the Northridge earthquake (1994) had purchased cover at the time. Insurers were liable for claims of \$15 billion despite having received a mere \$3.4 billion in premiums over the previous 25 years [39]. To ensure ongoing availability of earthquake cover, the California Earthquake Authority (CEA) was established in 1996 as a tax-exempt, not-forprofit, largely privately-funded pool to cover seismic damage in that State. Insurers had the option of paying an "exit tax" and offering cover, or transferring funds and participating in the pool; 70% agreed to transfer funds, which together with premiums and return on investments provides the total CEA income. It has no recourse to government backup [11]. California continues to have low uptake of earthquake insurance, however, with 88% of homeowners adopting to be self-insured against this threat [10]. High deductibles (10% or 15% of the sum insured) and premiums may be a contributing factor for this low take-up [45].

2.2. Examples of non-US pools

Also prone to earthquakes, New Zealand has adopted a different approach from the CEA to insuring the risk of earthquakes and other natural perils. The **Earthquake Commission (EQC)** provides automatic first loss cover for valid claims for all policyholders of residential fire insurance. Hazards covered comprise earthquake, natural landslip, tsunami, volcanic eruption, hydrothermal activity, restricted storm or flood damage to residential land, and fire following any of the afore-mentioned events. Premiums are collected through a compulsory levy added to all homeowner policies, and private insurers transfer the levy to the EQC for investment by the **Natural Disaster Fund**. Owners of non-insured property can expect no help from government.

The maximum cover from EQC is currently NZ\$100,000 (plus Goods and Services Tax (GST)) for home and NZ\$20,000 (plus GST) for home contents and comes at a cost of 15c per \$100 of insurance cover (excluding GST) per annum for damage arising from *each* natural disaster event, *regardless of risk* [19]. Until the premium cost was tripled from 5c in 2012, it had been unchanged per dollar of cover since the scheme's inception in 1945 [65]. EQC has been 'sorely tested' by the 2010–2011 Christchurch earthquakes³ with peak ground accelerations in the CBD close to the 500-year Average Recurrence Interval (ARI) building code design level for the September 4, 2010 (Darfield) event, and twice those design levels for the February 22, 2011 event [3]. Many of EQC's provisions and operations are now under review [65].

In 1941, following the Spanish Civil War, the **Consorcio de Compensación de Seguros (CCS)** was founded to indemnify Spanish insurance companies against claims arising from unpredictable events including natural disasters. It became a permanent state-run, private-public partnership in 1954 providing nationwide, state-guaranteed cover for extraordinary risks [6]. Extraordinary events cover is a compulsory component of all insurance policies for life, fire and natural perils, motor vehicle damage, property damage and personal accidents. Private insurers may offer this cover themselves, but most opt out adding the CCS surcharge to premiums and transferring the surcharge less a 5%

² Assessments are charges made to private insurers participating in government pools either on a regular basis (regular assessments) to cover operating costs or after an event should losses exceed the capacity of the program to settle claims (emergency assessments).

³ On September 4, 2010, the first of a swarm of earthquakes impacted Christchurch, the largest city in the South Island of New Zealand; it was a Moment Magnitude 7.1 earthquake with its epicentre at Darfield, 40 km west of the city. The third of five quakes designated as 'insurance' events occurred on February 22, 2011, centred 5 km southeast of Christchurch; this Moment Magnitude 6.3 event resulted in seismic motions well in excess of those underpinning the building code. 185 people died and damage to the CBD was such that much of it has now been demolished and large areas of former residential property designated unsuitable for rebuilding due to liquefaction. The cost of recovery is estimated at some \$NZ40 billion or 20% of annual Gross National Product (GNP) [66; 21].

deduction to cover transaction expenses [48,53]. The costliest year for losses was 1983, when flooding in the Basque Country, Cantabria and Navarra caused insured losses amounting to \notin 623 million [57,6].

The inclusion of natural catastrophe insurance cover in France is also mandatory in all comprehensive home insurance policies. Created in 1982, the French **Caisse Centrale de Réassurance (CCR)** is a public-private partnership providing government-guaranteed reinsurance. As part of the French Cat. Nat. scheme CCR was founded on the principle of national *solidarity*, leading to catastrophe insurance available to all at rates set by decree and uniformly priced *regardless of risk* [51]. Private insurers have the choice of reinsuring either with the state-owned CCR or the private market but contracting with the CCR is the preferred option. Insurers generally transfer 50% of their natural peril risks to CCR and pay that entity 50% of their natural disaster premiums in a quota-share-like arrangement [28].

In the UK, the Government and private sector insurers entered into an unwritten *Gentlemen's Agreement* that has led to private sector flood insurance operating in the UK since the early 1960s [32]. This agreement was that no residential property would be refused flood cover, except in areas where flooding was too frequent to be insurable, and on the understanding that the Government provide sufficient flood protection. It was an arrangement tested by widespread flooding in 1998 and 2000. A temporary arrangement called the *Statement of Principles*, incorporating the Gentlemen's Agreement was then forged, with the proviso that if Government did not improve flood defences and tighten regulations, insurers would withdraw their guarantee to cover all but exceptional risks [7].

The Statement of Principles was renewed and revised until its expiry drew near in 2013. After much discussion, an in-principle agreement was reached in June 2013 to replace the expiring agreement with a partnership to establish Flood Re as a not-forprofit fund owned and managed by the insurance industry. Flood Re will provide flood cover for an estimated 2% of properties, for whom obtaining flood cover is currently problematic, and do so at premiums that will be capped and subsidised by a levy on all other insured homeowners whose flood risk will continue to be priced by the market. This levy will pass to Flood Re, which will seek reinsurance cover from the global reinsurance market; losses from extreme flooding (with Annual Return Intervals (ARI) greater than 200 years), however, will be the responsibility of government [4]. The scheme is expected to be operational in 2016 and have a 25year lifetime during which premiums are expected to move towards being fully risk-reflective [7].

With roughly 26% of its land area lying below mean sea level and another 29% prone to riverine flooding (Netherlands Environmental Protection Agency: http://www.pbl.nl/dossiers/klimaatverandering/content/correctie-formulering-over-overstromomgsrisico), the Netherlands faces an existential threat from flooding. Combatting this threat is taken as a government responsibility. In response to the 1953 disaster⁴ when 1836 people lost their lives, 100,000 were people evacuated and 4500 buildings destroyed, the Government initiated the construction of the Delta Works. This comprises 53 dyke-ring areas, each a closed system consisting of dams, dykes, sluices and storm surge barriers that were completed in 1997. Legislation requires that the Delta Works provide protection to water levels equalling or exceeding an ARI of 10,000 years along the coast, and to 1250 years along the riverbanks. According to Aerts et al. [2], the system will need to be updated to adapt to rising sea levels and anticipated increases in precipitation.

3. Pricing of risk

In few of the government pools examined herein were premiums risk-reflective at the individual property level. The term risk-reflective or risk-based is to be distinguished from *actuarially* sound, an elusive term usually understood to mean that ratemaking includes the expected value of all future obligations: claim settlement expenses, operational and administrative fees, reinsurance and the cost of capital [1]. Of course pools may be actuarially sound from a solvency perspective in the sense of having sufficient reserves and reinsurance arrangements to meet their statutory obligations but nonetheless still choose not to impose risk-reflective premiums upon policyholders. This expressly means that low-risk households are subsidising those more at risk. This is the case, for example, with the policies of CCS in Spain that are based on principles of compensation, solidarity and cooperation [53]. This is also true of CCR in France and EQC in New Zealand where homeowners are charged uniform rates regardless of their individual risk. Hallegate [30] argues that there are rational economic arguments for subsidising insurance in economically important regions, but to our knowledge this notion has not been expressly tested. The Treasury [65] discussion document of EQC post the Christchurch earthquakes argues for continuing use of non-risk reflective pricing on affordability grounds.

NFIP has been criticised for charging below actuarially sound rates because "the program does not collect sufficient premium to build reserves to meet the long-term future expected flood losses including catastrophe losses [and so] it is inevitable that losses from claims and the program's expenses will exceed the funds available ... in some years and, cumulatively over time" [69]. The annual target for the program's overall premium is at least the amount of losses and expenses in an average historical year and does not consider the potential for more extreme losses (see next section). In other words, there is a high likelihood of events with costs in excess of the long-term average that cannot be covered out of the current year's premium. Moreover Congress has authorised subsidised insurance rates for policies covering certain structures to encourage communities to join the programme. Thus in the words of the 2001 report of the Government Accounting Office [69], the scheme is actuarially unsound by design. NFIP losses above its capital or reserve levels are funded by borrowing from the US Treasury and are intended to be repaid over time by policyholder premiums [1].

Historically, Citizen's premiums in Florida have not been riskbased. In 2009 legislation was passed requiring Citizens to move towards actuarially sound rates by following a "glide-path" of annual increases, but with increases capped at approximately 10% p.a. ("Actuarially sound" in this case means that premium income is sufficient to cover projected claims resulting from a 100-year ARI event for the coming season, without resorting to insurer or policyholder assessments). To decrease exposure, a depopulation program is in place.

More than 10 years has now passed since the last major hurricane made landfall in Florida (Hurricane Wilma in 2005) (http:// rogerpielkejr.blogspot.com.au/2014/06/the-us-hurricane-droughtin-usa-today.html), the longest hurricane 'drought' on record, and Citizens has reduced its exposure to less than 1 million policyholders. By 2014 premium rates had risen to a level that Citizens considered actuarially sound, and cash reserves of over \$7.66 billion had been accumulated when aggregated across all lines of

⁴ The 1953 disaster was caused by surge from a major storm that tracked across northwestern Europe. Coinciding with a spring tide, the surge caused record high water levels breaching 150 sea dykes and more inner dykes. Once breached, there was nothing to prevent the spread of water through low-lying areas [27]. The same event also caused 307 deaths in England and another 19 in Scotland and ultimately led to the construction of the Thames Barrier (http://www.metoffice.gov.uk/news/ in-depth/1953-east-coast-flood).

business [64]). Some private insurers were authorised to lower rates, and Citizens was considering decreases in 2015. This experience illustrates the sensitivity of disaster insurance schemes to the temporal volatility of event losses, in this case a lower than normal sequence of losses, and the value of government guarantees when the reverse is true.

Some areas of Florida now pay actuarially sound rates, but much of the coastal and other high-risk areas remain significantly under-priced [36]. The state regulator in June of this year, however, approved changes for 2016 that include average rate decreases of 1% for inland (low-risk) multi-peril cover and average increases for coastal residential wind-only policyholders of 8.8% (http://www. sun-sentinel.com/business/consumer/fl-citizens-2016-pricing-20150622-story.html). Citizens suggests that it will then have the potential to fully cover losses to their portfolio from a 100-year ARI

As for the CEA, its premiums are required by legislation to be based on modelled estimates of expected losses [35]. However initial premium settings met with political and consumer pressure and so CEA chose to rate at a reasonably coarse spatial resolution using only 19 rating zones for the state and also reduced the overall level of premiums especially in high risk areas. This has created opportunities for non-CEA insurers to offer reduced premiums in low risk areas.

TWIA employs catastrophe loss modelling to simulate event losses from landfalling hurricanes to its Book of Business but makes no premium differentiation in respect to geographic location. Properties certified as conforming to more stringent construction codes are, however, subject to premium discounts. TWIA pricing was discussed at the Meeting of the TWIA Underwriting and Actuarial Committee on 30th July, 2015 (https://dl.dropbox usercontent.com/u/53088391/Actuarial%20and%20Underwriting%

20Committee%20Meeting.mp3) and at the TWIA Board on 4th August 2015, (https://dl.dropboxusercontent.com/u/53088391/ Board%20Meetings/TWIA-Galveston-2015-Tues.mp4). "Actuarial pricing" as adopted by TWIA is defined as premium rates that over the long-term match modelled losses. However there was some confusion about whether as implemented this would meet the pool's statutory obligations to be able to pay claims on a 100-year ARI event, if repeated in successive seasons. The group actuary acknowledged that TWIA would not have the funds to cover a second event but dismissed that circumstance as "unlikely." This view completely ignores the likelihood of clustering of events between and within seasons favourable to the development of severe tropical cyclones.

4. Dealing with deficits

hurricane.

Government pools usually contain an inherent contradiction in trying to provide *low cost* insurance to *high-risk* properties and so the funding of deficits to which they are inevitably prone becomes important. The fat-tailed nature of catastrophe loss distributions also predisposes pools to deficits because of the possibility of losses very much larger than either previous loss experience [40,41] or the estimated 100-year ARI loss.⁵ In what follows we examine the deficit history of the Government pools scrutinised here.

With financial backup of the state, government pools can fall back on resources not available to the private sector: Hurricane Katrina (2005) and Super Storm Sandy (2012), for example, rendered NFIP technically insolvent, but it was able to fall back on its Federal government guarantee to stay in business. Congress increased NFIP's borrowing authority from the US Treasury from a pre-Katrina level of \$1.5 billion to \$20.8 billion, and again in 2013 post-Sandy to \$30.4 billion; its annual premium income is around \$3.5 billion (2011) [38]. Policy holders are now very much dependent upon government largesse, a circumstance the scheme was presumably created to avoid.

When Hurricane Andrew made landfall in Florida in 1992, the private insurance industry was grossly undercapitalised due to increased exposure and competitive pricing; several insurers were subsequently rendered insolvent. The vehicle guaranteeing claims payments, the *Florida Insurance Guaranty Association*, with insufficient resources to cover the shortfall, was forced into a special bond issue resulting in assessments being passed to policyholders for many years [52]. The reinsurance vehicle, the Florida Hurricane Catastrophe Fund, also found itself in the same situation when its surplus was exhausted in the 2004 and 2005 seasons [24].

In the event of catastrophic losses turning its current surplus into deficit, Citizens would need to impose surcharges and emergency assessments on all property and casualty policies issued in Florida. According to the James Madison Institute [36], this would result in 78% of low-risk policyholders subsidising the losses of the remaining under-priced, high-risk properties. In the absence of a pool, private insurers would be required to charge rates sufficient to invest in risk transfer that would cover years of catastrophic loss.

In 2011 the Texas Department of Insurance placed the TWIA on Administrative Oversight whilst reforms were considered to improve its deteriorating financial position. In March 2013 the TWIA Board of Directors met to discuss their options for dealing with its 2012 deficit of \$46,337,000 and considered declaring insolvency [67]. The Texas Department of Insurance subsequently amended the terms of Administrative Oversight citing operational improvements since 2011. Included in the reforms is a 'depopulation' plan aimed to reduce its exposure by actively encouraging private insurers to assume TWIA policies [58].

In the case of CEA, which enjoys no government guarantee, if its losses were to exceed its capital reserves including reinsurance, then all policyholders would be required to pay a 20% premium surcharge to provide additional funds. Should these total resources still prove insufficient to pay claims, payments to policyholders would be prorated and only paid out in full when sufficient funds, such as from future premiums, became available [35].

Technical insolvency was also the fate of EQC after the 2010-11 Christchurch earthquakes wiped out its reinsurance cover and capital reserves that had accumulated since 1945 [20]. This was also the case for the CCR in France, whose government guarantee was required to recapitalise it after large losses due to flooding in the Aude area in November 1999 and windstorms Lothar and Martin in December of that same year [51]. In 2000, premium rates were increased by around 40% and reinsurance cover was limited to 50% [37].

In contrast to the other schemes surveyed here, the CCS in Spain has a large and growing surplus and its Government guarantee has not been called upon. This may be for a number of reasons: its broad subsidising base; catastrophe insurance being over-priced; or it may just reflect a gentle hazard history to date. We remind readers that this was also true of EQC in New Zealand until the Christchurch earthquakes.

The question of government-funded deficits has not arisen in the UK where the flood risk has to date been covered by the private sector, or in The Netherlands where the government manages flood risk through significant investments in engineering works.

⁵ Note that this average loss based on recorded loss history differs from the Annual Average Loss as calculated in catastrophe loss models, which is typically estimated as the arithmetic average of a catalogue of simulated, but physically realisable, event losses, over a 50,000-year time series.

5. Encouraging mitigation

Government pools (and private insurers) can in principle minimise losses over time by encouraging risk mitigation, but, with two significant exceptions, we found limited evidence for this. Of the government pools considered, NFIP and TWIA are exceptions. Flood insurance in the US is mandatory for homes in high-risk flood areas with mortgage loans from federally regulated or insured lenders. FEMA produces maps identifying flood-prone areas; homeowners located in these areas can be eligible for discounted insurance rates if the community participates in an incentive program, the Community Rating System, and if local government commits to prescribed mitigation and flood management standards [22]. NFIP covers around 5.5 million properties out of which 20% receive discounted rates [25]. Thus a positive outcome of NFIP is the high percentage of local authorities imposing flood plain management schemes based on the 100-year ARI flood height;⁶ however, Burby [9] questions the extent to which this has inhibited construction activity in flood-hazard areas or had much impact on federal disaster relief costs. Claims from hurricane-induced storm surge, on the other hand, pose a significant ongoing problem for NFIP and it is unclear how the organisation is addressing this.

In Texas, the TWIA has had a big influence on building standards, particularly for houses and other low-rise buildings. The program has been successful in enforcing mitigation measures by requiring buildings meet appropriate weatherproofing specifications of the WPI-8 certification. A Texas Department of Insurance (TDI) windstorm inspector checks buildings to ensure compliance with TWIA building specifications and, if the standards are met, a certificate is issued [68]. Prospective buyers now have an expectation of TDI Certification when viewing any property.

In California, CEA invests in mitigation measures including incentives for those in its programme to retrofit residential buildings but the low uptake of CEA cover limits its ability to materially reduce future losses.

While EQC in NZ has no direct responsibility for mitigation, it has played an important role in supporting research and development related to earthquake mitigation and promoting continuing improvements in building codes and planning regulations. Its national GeoNET programme of strong ground motion sensors has played an important role in understanding the character of the Christchurch earthquake ground motions and resulting damage to buildings and infrastructure. The New Zealand government also acted after these earthquakes by red-lining certain areas from redevelopment and purchasing properties within these zones, thereby reducing the risk in future earthquakes. These zones were mostly residential areas that had suffered widespread liquefaction. Again, however because premiums are not risk-reflective, EQC provides no incentive for the upgrading of older homes. This is also true of CCR in France, which sets rates by decree and uniformly regardless of risk [51].

In Spain, the CCS policy of charging uniform fees does not encourage risk-reducing measures on the part of policyholders. A directive initiated in 2007 to assess flood risk, produce flood risk maps and subsequent management plans is ongoing [23]. Historically the response to flooding in Spain has been to seek engineering solutions, but the collapse of the Tous dam in the region of Valencia in 1982, with the loss of life of at least 20 persons and many more having to be evacuated, has led to the realisation that flood control measures may encourage development on the floodplain, and the focus has been redirected towards more appropriate land-use planning and improvements in preparedness [61].

The proposed Flood Re programme in the UK is being designed with explicit responsibilities on government for mitigation. Under the new arrangements the government will also be liable for damage costs due to floods with ARIs in excess of 200 years. In practice the definition of what constitutes a 1-in-200 year event or event loss will be critically important.

As discussed earlier, the government of The Netherlands explicitly undertakes mitigation on behalf of the nation.

6. Discussion

In general it is US pools that have received the most academic scrutiny with the catalyst for their creation usually a large event loss that has seen the insurance sector faced with liabilities far in excess of its resources. Threatened with insolvency, companies voiced their intention to withdraw from the market and faced with what was seen as 'market failure', governments felt obliged to intervene in the market in order to sustain insurance availability. Thus the initial motivation behind the US pools has been the provision of catastrophe insurance cover, and not risk-reduction per se and there has been a tendency to keep premiums low across the board and to have policyholders in low-risk areas cross-subsidising those at higher risk [18]. In contrast, private insurers operating in a competitive market are increasingly obliged by market forces to set prices based on the risk to the policyholder. This is certainly the case in Australia.

Despite intentions to be the insurer of *last* resort, at least in the US, political intervention in setting premiums too low has sometimes seen government pools competing with the private sector and becoming the insurer of *first* resort. For example in 2008 after Hurricane lke depleted the reserves of the TWIA, legislation was introduced in the following year requiring TWIA to stop pricing competitively and limit eligibility to property owners who had been declined insurance equivalent to basic TWIA cover by at least one private insurer [56]. Premium pricing continued to be actuarially unsound, however, with the undercapitalisation leaving the entity vulnerable to unmanageable losses.

While it is easy to make the case that insurance premiums should reflect actual risk, attempts to implement such practice are inevitably politically difficult. We have already referred to concern about rising premiums in northern Australia arising from a better appreciation by insurers of the tropical cyclone risk to certain classes of buildings. In the US, this tension has played out more dramatically where NFIP's deficit ultimately led to the introduction of the Biggert-Waters Flood Insurance Reform Act of July 2012. The reforms stipulated that rates should reflect current risk and this meant that rates would have risen tenfold in some cases. They were also to phase out discounted rates for 'grandfathered' properties and other repetitive-loss buildings⁷. In 2014, political reaction to the reforms led to the Homeowner Flood Insurance Affordability Act reversing many of Biggert-Waters' amendments, an

⁶ We note in passing that the oft-used 100-year ARI flood height employed for NFIP and in Australia in land-use planning is a flawed risk metric, in Australia, at least. According to the National Flood Information Database [47], the difference in above-ground flood depths between the 100-year ARI and the notional Probable Maximum Flood vary from only a few tens of centimetres to nine metres across different catchments (Dr Keping Chen, Risk Frontiers, pers. com.) Clearly the risk to property will be very different across these.

⁷ Grandfathered properties are those built before introduction of the FEMA guidelines and can neither be denied insurance by NFIP nor charged rates that reflect any reassessment of their flood risk. Historically such properties had been responsible for much of the insured losses with the Government Accountability Office [26]) finding that repetitive-claim properties, which comprised only some 1% of polices, were responsible for between 25% and 30% of claims. These figures represent the situation prior to the landfall of Super Storm Sandy in 2011.

act which will do little to alleviate the \$24 billion debt NFIP still has to repay for losses incurred during Hurricane Katrina and Super Storm Sandy.

In the UK, the decision to create a new entity Flood Re, to which will be ceded most of the serious flood risk, took place after long discussions between government, the Association of British Insurers and other industry sector participants [31,7]. The UK is thus in a period of transition and aims to move towards risk-reflective private sector pricing over a 25-year period with the government accepting the 'tail risk' (event losses with an ARI greater than 200vears) and responsibility for mitigation. A key attribute of the design of the scheme that may ultimately prove decisive in reducing risk in the long term is the intention that Flood Re not be available for homes constructed after January 1, 2009 [7]. The implication is that homes constructed beyond this date will either be constructed outside of floodplains, or in flood resilient ways if they must be. Over time and provided this measure is enforced, the proportion of high-risk properties should decrease as they are 'diluted' by the increasing numbers of new homes built to better standards in respect of flood. This brings us to the issue of land use planning, which we discuss next.

7. Role of insurance in incentivising resilience: Australian examples

When we consider ways to address the increasing trend in disaster losses worldwide it is impossible to overlook the role played by poor land use planning. While this is an issue in most countries, we note here two examples from Australia: the 2009 Victorian bushfires (wildfires) and the 2010/11 Queensland and Victorian floods. In the former, studies undertaken for the 2009 Royal Commission [12,16,17] showed that 25% of destroyed homes were situated within 1m of the bush – effectively within the flame zone and part of the fuel load. Many people died in futile attempts to defend such properties.

Similar observations pertain to the 2011 flooding of Brisbane in an event leading to economic losses of some AU\$6 billion and the introduction of a temporary reconstruction tax on the nation. Lost in the ensuing political debate was just how similar the flooding footprint in Brisbane was to that of the 1974 floods, and no doubt those of bigger floods in the 1800s [70]. In 2011 the flooded area was much more heavily developed than had been the case in 1974, with the Brisbane City Council approving between 2005 and 2011 1811 additional development applications in the area subsequently flooded (K. Doss, City Planning & Economic Development, pers. comm.).

It is too soon to judge whether the introduction of risk-reflective premiums is informing land use planning decisions in Australia, but insurers can exert market pressure in other ways. An example in 2012 was the temporary withdrawal of the Suncorp Group, one of the largest general insurers in Australia, from offering and renewing policies in the Queensland towns of Roma and Emerald. The 16-month withdrawal came after Suncorp announced it had paid out AU\$150 million in claims and received AU \$4 million in premiums after these towns flooded three times in years (http://insurancenews.com.au/local/suncorp-quitstwo flood-towns-and-calls-for-mitigation-action). This outcome was only possible because of Suncorp's high market share in the region, high local awareness of the threat and the fact that prior to the Brisbane floods it was the only significant company offering flood insurance. Its withdrawal meant that policyholders who had been previously covered were no longer going to be. The decision brought about a rapid response on the part of government and the construction of levees.

The Productivity Commission [59] provides other Australian

examples where premiums have been reduced following the construction of levees. It also notes discounted premiums in tropical cyclone-prone parts of the country for newer construction, which reflect their reduced likelihood of structural failure in high winds; McAneney et al. [49] estimate that the introduction of more windresilient construction standards post~ 1980 has reduced insurance losses in tropical cyclones by some 67%. Despite this, and as mentioned already, there is a perception that premiums in Northern Australia are excessive and the government is concerned that this could lead to significant levels of under- and self-insurance (The Northern Australia Insurance Premiums Taskforce: http://jaf.minis ters.treasury.gov.au/media-release/024-2015/).

8. Implications for policy

Returning to the central question of this paper, as disaster losses continue to rise and insurers are increasingly able to discriminate risk at a policy level, will there be an increasing demand for government pools and will these stymie risk reduction efforts that risk-based premiums should in theory encourage? The increasing challenge in the future is how to increase societal resilience in the face of future catastrophic events in a fair and affordable manner. At least in the case of those government pools examined here the evidence is mixed: either because of political pressure they are actuarially unsound and end up creating a continuing liability to governments, or in failing to price individual risks correctly they encourage property development in risky locations, e.g. some coastal locations in the US, and fail to provide incentives for retrofitting older properties at high risk.

On the other hand the imposition of risk-reflective premiums by the private sector insurers will inevitably lead to situations where they may choose not to insure certain households or only at costs that many may find unaffordable. Although it would be a mistake to imagine that those, or even most of those, living in vulnerable locations are poor, the reality, given varying socioeconomic demographics in vulnerable locations, is that the next major event will likely find significant numbers of impacted homeowners without insurance and with an expectation of emergency financial aid from government. In New Zealand, there has been no succour for those in Canterbury who had chosen to self-insure (uninsured). This is easier politically when most homeowners are insured as is the case in New Zealand and Australia and avoids the tendency of acts of post-event generosity by government to further reduce incentives for homeowners to take out insurance.

The dilemma outlined above is well known, but resolving it is not easy. In fact it does not seem possible to arrive at a definitive conclusion about the merits of government pools vis-à-vis private sector insurance. Although not reviewed here, some cantons in Switzerland operate government schemes while others rely on the private insurance industry for catastrophe cover and each no doubt believes it is doing the best for its inhabitants [71]. Benefits and problems will only emerge in the wake of a major disaster and depend very much upon the details and local implementation of the funding arrangements. In the absence of any obvious solution, we conclude with three observations:

First, a reminder that insurance is primarily about the accurate pricing of risk and risk transfer and, *except* in a financial sense, is not a risk-reduction mechanism per se. The authors do not see insurance as an instrument of social policy. On this point, we are in agreement with the submissions by Marsh Ltd., an insurance broking company, to a UK parliamentary Environment Committee on household insurance [31]. O'Neill and O'Neill [54] take a contrary position.

Secondly, and despite the last point, risk-reflective insurance

premiums can serve as a signal to all actors about natural peril risks. Insurance premiums are not the only way of providing transparency on the cost of risk but private insurers are the only ones with an immediate financial incentive to acknowledge such costs. Moreover insurers are the only entities that can reward policyholders when risks are reduced. In the absence of legislation, it is difficult to imagine widespread risk reduction activities taking place without risk-reflective premiums [45].

Lastly, at least in Australia, it is local governments that are ultimately responsible for land use planning decisions and it seems curious that they remain largely unaccountable for these. In short it is salutary that Gilbert White's 1945 thesis that "Floods are an act of God, but flood losses are largely an act of man" [73] still rings true, and for a wider range of natural perils than just flood.

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NAIC

INTERNATIONALLY ACTIVE INSURANCE GROUP (IAIG)

Last Updated 5/14/20

Issue: The supervision of internationally active insurance groups (IAIGs) has garnered considerable discussion following the 2008 global financial crisis. Insurance markets have evolved over the years to become increasingly global and interconnected. In response to the increasing globalization in the insurance sector as well as key lessons learned from the financial crisis, the **International Association** of Insurance Supervisors (IAIS) (http://www.iaisweb.org/Home-2) began developing a major project called ComFrame (https://www.naic.org/cipr_topics/topic_comframe.htm) (Common Framework for the Supervision of Internationally Active Insurance Groups). ComFrame is a set of international standards focusing on the effective group-wide supervision of IAIGs.

Overview: ComFrame is built on the premise that IAIGs should be supervised in a collaborative fashion by home and host supervisors, thereby resulting in more effective and efficient supervision. It contains qualitative and quantitative requirements for IAIGs and

Committees Active on This Topic

International Insurance Relations (G) Committee

(/cmte_g.htm)

Additional Resources

IAIS Website (https://www.iaisweb.org/home)

Contacts

Media queries should be directed to the NAIC Communications Division at 816-783-8909 or **news@naic.org** (mailto:news@naic.org) for home and host supervisors intended to foster greater cooperation and coordination among supervisors. ComFrame expands upon the high level standards and guidance set out in the IAIS Insurance Core Principles (https://www.naic.org/cipr_topics/topic_insurance_core_principles.ht 783-8909 (ICPs), which generally apply on both a legal entity and group-wide level. To provide better context for ComFrame with respect to the ICPs, ComFrame is presented under the relevant ICPs.

What is an IAIG?

ComFrame provides the two criteria for an insurance group to be identified as an IAIG: 1) International Activity — premiums are written in three or more jurisdictions, and percentage of gross premiums written outside the home jurisdiction are at least 10% of the group's total gross written premium; and 2) Size based on a three-year rolling average, total assets of at least \$50 billion USD, or gross written premiums of at least \$10 billion USD.

Process of Identifying an IAIG In general, the group-wide supervisor, in cooperation with other involved supervisors through a **supervisory college** (https://www.naic.org/cipr_topics/topic_supervisory_college.htm) , determines whether an insurance group or an insurance legal entity operating through branches is an IAIG after considering whether it meets the criteria outlined above. Supervisory colleges are intended to coordinate oversight of IAIGs at the group level. The process also allows a degree of

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supervisory discretion on whether a particular group should, or should not, be considered an IAIG, with ComFrame providing guidance on factors that supervisors may want to consider.

Status: Over the past decade, the NAIC's international involvement has been increasingly focused on strengthening the supervision of insurers that operate internationally. U.S. state insurance regulators support the objectives of ComFrame to the extent that it results in an outcomes-focused framework that enhances supervision of IAIGs.

While the IAIS is not responsible for identifying IAIGs, in July 2020 it will begin publishing, and will update annually, a register of IAIGs that have been publicly disclosed by their group-wide supervisor. The IAIS expects that approximately 50 IAIGs will be identified by supervisors.

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Summary on Private health insurance in OECD countries

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1 Health is a key component of the social and economic agenda

Health expenditures represent an ever-growing part of GDP, ranking from 8% to 10% in OECD countries today. Meanwhile, health care remains predominantly financed through public funds, which part in total health care financing is still increasing in developed countries: on average, 74% of health care are financed by public resources (be it through taxation or social insurance). In the US - the country that relies most on private health insurance- 60% of health expenditures are still financed by public sources. This overwhelming role of public finance is justified by the well-known market failures in the insurance sector aggravated in the health insurance area, in so far as it can not be considered a fully private good but rather a public good and a need for the population, at least for primary care.

However, technological progress, the new expectations of consumers, population ageing and the reluctance of governments to devote an ever-growing proportion of State budget to health care have led to the present systems coming in for scrutiny. Reform of the health sector is currently under way in the majority of Member countries. Insurers are an integral part of the prospects opened up by these reforms, and they already play a complementary role, which varies in significance, in the majority of Member countries. In some countries they even have partially taken the place of public services. However, no country has so far opted for total substitution.

Private insurance plays its role at two different levels: the financing level, where the insurer reimburses the cost of care or provides compensation, and the care providing level such as in the case of managed care. So private health insurance covers a very extensive range of services, and also brings into play a many different operators. Its characteristics, and in particular the extent of its integration in the various parts of the public systems, differ considerably from one country to another.

In this context, private health insurance now appears amongst the top priorities of the OECD insurance committee. I will therefore introduce the work carried out in this field by the Organisation. I will then present a very general overview of the development of private health insurance in OECD countries - bearing in mind that comparison is a hazardous task in an area where, alike in the pension area, each country has deeply rooted historical and social specificities. To conclude, I will illustrate this presentation with some interesting innovations on insurance products, services and institutions experimented in various OECD countries with a view to improve the private health insurance system. Future trends in the organisation of health insurance systems may well stem from some of the experience of these pilot countries.

2 OECD work on health care

Healthcare has been identified by OECD Member countries as one of the Organisation's top priorities for the years to come. The IC work in this area is therefore part of an integrated "horizontal project, " carried out in close co-operation with for instance the Working Party on Social Policy, competent with regard to public health insurance. This IC follows a two-step process. A review of the overall conditions and recent developments in the Member country markets for private health insurance from the economic, social, and regulatory standpoints, has first been conducted, which should be ready for publication in the coming weeks. Constraints and short comings of the development of private health insurance will be examined, as well as regulatory policies adopted to ensure an adequate framework for operations. Best practices will be identified to assist government in their regulatory reform in this area.

A statistical data collection has been launched to support and complement this work.

The Committee also analyses specific issues on which it wishes to pursue the work. Particular attention will for instance be paid to aspects of private health insurance that are tied in with pension systems, such as private disability and long-term care insurance schemes.

3 Recent developments of private health insurance in OECD countries

3.1 The role of private insurance in health care provision

In industrial States, health care financing has historically been inspired **by three competing "models**": the first one, implemented by Bismarck in Germany, relied on professional enrolment through compulsory contributions from employers and employees; more recently, Beveridge introduced in the after war UK a public health monopoly, ensuring universal social protection. The last form of organisation is a mix-system, which prevails in the US, where health insurance is not compulsory. Although this model is the only one not offering a right to health care to citizens, leaving 15% of the population with no health care cover, it is widely exported, notably in emerging economies.

The extend and pace of the development of private health insurance in each country has been very dependant on the original pattern of the national health care organisation, even if most countries tend to have now a rather hybrid health care system (mixing elements from the three original models). Amongst OECD member countries, **strong contrasts can now be observed in the balance between private and public health insurance**. Although, private sector is mainly *supplementary* to public coverage, in some countries it can *substitute* to public sector to cover even primary care for all or part of the population. Lastly private health insurance may provide the same level of coverage than the existing public scheme, while giving access to private providers.

- Two countries, the **United States** and **Switzerland** have opted for a highly privately financed system, in which private insurance intervenes even in primary care. In the US, 40% of overall health expenditures are covered by private insurance, and above 74% of the population is enrolled in a private scheme, be it a substitute or a complement to public schemes.
- In Germany and in the Netherlands the wealthiest, independent workers and most civil servants are excluded from the social health insurance. Health care insurance is left to their own initiative. In Germany, 20% of the population are insured on a voluntary basis; among these, 7 millions are entirely insured by private insurers.
- Nevertheless, in the majority of OECD countries, private health insurance is supplementary to the public scheme and provides co-payment and deductibles or covers specific services not taken into account by public financing. The majority of the population therefore contracts a co-payment insurance in **France**, **Canada**, **Japan**, **Austria** and **Denmark** to some extent.
- In **Ireland** and **Australia**, it is possible to "opt out" of the public scheme. In both countries, private health insurance is highly regulated in order to be accessible to the most part of the population, hence 40% have a private coverage that gives access to private providers.
- In other countries with an overwhelming public financing and providing system such as the UK, Sweden, Norway, Finland and Portugal, private health insurance represents a small market covering currently less than 10% of the population, and insuring mainly access to private providers.
- Regarding countries in transition, despite the recent privatisation of health care in **Poland**, health insurance markets remain narrow, due to a lack of maturity of insurance markets and to an inherited quasi-universal public coverage. Lastly, in middle income countries, like **Mexico**, **Turkey**, **Korea** or even **Greece**, the role of private insurance also remains marginal (5% of the population enrolled).

In absolute terms, **premiums in health insurance markets are growing** in every country. They have increased by 4% in Europe in 1997 (marked growth in group insurance policies). Market liberalisation at the European level should allow further growth in the future: even though a first attempt of harmonisation

was achieved through EU third directives on non-life insurance, this was not enough to fully liberalise the European market. Generally speaking, **international competition remains low for the time being** but could well develop in the future, especially in countries where supply is rather underdeveloped. In transition countries such as Poland, Hungary, but also Turkey, demand for better service and products is increasing, but is not so far satisfied by local providers.

3.2 A wide range of products and services

3.2.1 Characteristics of product and pricing

Health care expenditures can be financed according to three basic models: risk-based calculation of premium, community rating and funding.

- **Risk based calculation** is the most common way for private insurers to provide health products. Two different types of policies may be distinguished: **individual and group insurance**. These models involve different kind of selectivity and premium calculations.

- Individual policies are scarce in OECD countries (except in Italy and in Denmark). For such policies, individual contract premiums are calculated on risk-based criteria such as age or age at entry, sometimes gender (Luxembourg, Portugal, Switzerland) and often health status. Therefore premiums are higher for older and weaker persons. Moreover, private insurers are allowed in most case to deny the access to high-risked individuals or to impose waiting period (such as in the US, Luxembourg or Switzerland). This is the case in nearly all OECD countries except when policies are aimed at protecting specific categories of persons.
- Group insurance policies are more common. They are widespread in a number of countries such as:
 - -- The US, with more than 70% of the population covered by this type of scheme,
 - -- France, where two thirds of insured are covered by a global contracts through the employer,
 - -- Germany,
 - -- The UK, where three quarters of the population have a supplementary health insurance cover,
 - -- Canada,

-- And recently **Portugal**, in which 90% of contracts are group insurance policies.

Reasons for this development certainly lie on the particular financial and access facilities of these policies. Actually, since risks are borne by more people, insured enjoy lower premiums based on an experience-rated calculation. Insurers may therefore have fewer incentives to have recourse to risk selection.

- A less widely spread model of financing private health insurance is **community-rating**. In Ireland and Australia, it has expanded on a national basis. Like in public schemes, policyholders pay according to their incomes, disregarding the risk they represent, and receive benefits according to their needs. This allows for a more equitable access to supplementary health insurance. However, an appropriate regulation is necessary, considering that this type of products requires whole-life investments, no selectivity from the part of insurers, and risk-equalisation so that risks may be shared among all insurers in the country.

A last point should be highlighted considering the length and the very financing of private health contracts. Indeed, most of the time, for group insurance and the majority of individual policies, health contracts are understood as short-term non-life insurance policies that last a year at most. These contracts are generally renewable by both parties like in England, or only by the insured like in Portugal. (Australia and Ireland, but also Greece, Austria, Germany and Switzerland to some extent, are however exceptions to this rule.

- Besides, in Austria, Germany and Switzerland, health insurance is not only provided through whole-life contracts: it also involves **funding processes** of financing. For instance in Germany, part of the premiums is accumulated in a fund that allows for no premium adjustment owing to age. Thus this specific pattern of private health insurance is better tailored to an ageing population and provides better protection for older individuals that may find it difficult otherwise to afford supplementary insurance.
3.2.2 The range of benefits provided by private health insurance

- Except for the US, Switzerland and to some extent Germany and the Netherlands, benefits of private health insurance are mainly **co-payments of practionners' fees** and drugs and of a large range of specific treatments not covered by public schemes. These can be specific diseases such as cancer in Korea, particular or luxury services such as private room, and alternative medicines. Coverage may be comprehensive with a variety of different policies like in most western European countries and the US, or narrower like in Turkey or Korea.
- On the other hand, in Sweden, Finland, Denmark, the UK, and above all in Spain, Portugal and Mexico, private health insurance is understood as a way to avoid long-waiting lists of public providers and to gain more freedom of choice for general practitioners and in-care treatments as well as better quality services.
- **Long-term care** has recently developed on private health insurance markets. In Germany, France, Italy, the US but also Denmark, the UK and the Belgium, this benefit has lead to specific ruling allowing private sector to cover this risk. Germany even innovated by establishing an obligation to contract long- term care insurance.
- **Income replacement** in the event of sickness or disability is also currently developing in many OECD member countries including Switzerland, Japan, or the US.

4 Main issues at stake and prospect for future developments.

4.1 Issues at stake in the development of private health insurance

Assessing the performances of health care systems is not an easy task. Two main criteria could be considered to this end:

-- **Efficiency**, understood in relation to the achievement of three main goals: improving population health; responsiveness to the legitimate aspirations of consumers; and cost-minimisation, and

-- Equity, or the fairness of the distribution across the population of each for these three goals.

4.1.1 Advantages

So far private health insurance in OECD Member countries has proved able to achieve some of these goals. It has certainly helped in **upgrading the quality of health care provision**, even when private health insurance intervenes in primary care.

In the US, where private health insurance covers the population even for primary care, life expectancy of female at birth is close to 80 years. This is almost as much as in the United Kingdom, although the latter mainly implements a public system to finance health care. In Switzerland, life expectancy is even higher (82.5 years at birth for women). Furthermore, these countries have developed high quality treatments for serious diseases like aids or cancer.

As regards to **efficiency and satisfaction of consumers**, in a context of curtailing expenses and hence benefits in the public sector, private insurance is mainly used as a way to alleviate public burden while insuring tailored and free-choice services to patients.

Accordingly, in Sweden, Norway, but also Portugal or Mexico, there are strong incentives to promote private health insurance, in order to offset the deficiencies of the public system. Similarly, in Greece or Turkey, the high level of discontents regarding their public system has lead to regulatory changes in the 1980s, paving the way for private health insurance development.

Moreover, new medical technologies and treatments create new expectations. A growing number of very specific treatments are more consistent with private choice of financing and coverage. In this regard, high quality services and tailored prevention can be viewed as more of a private good.

These advantages of private health insurance should not mask the risks that need to be addressed if this sector is to expand.

4.1.2 Constraints and problems stemming from the growth of private health insurance

- The major objections addressed by the detractor of private health insurance relate to **equity considerations**: private health insurance often turns out to be insurance for "good risks", that is to say for the young and healthy. For instance in Switzerland, since the new Health insurance Law of 1996 has entered into force, premiums become to high for people over a certain age. These individuals however need more than any other age category of the population supplementary coverage and *a fortiori* primary care insurance. In the United States the situation is even worse, since private health insurance is not mandatory. About one fifth of the population is not covered, part–time job employees. Besides, there are great inequalities in the level of premiums and that of benefits. These discrepancies do not appear only between individual and group policies, but also impact group policies according to the size of firms. Lastly, this linkage of health insurance to professional position may generate distortions in individual labour market decisions.
- More surprisingly the goal of **cost-minimisation** is far from being achieve through the mere market. The American example is worth considering in this respect: it is at the same time the most privately financed health care system and the most expensive OECD system.13.6% of GDP is spent on health care, against only 6.7% in the United Kingdom, and 8% to 10% on average in OECD countries.

These figures could be considered as less worrying if it corresponded to a specific choice of the population to spend more on health care, or if it results in better products and services. However, the raise in costs owe more to the financing arrangement and asymmetry of information on the health market than to the improvement of services provided. Besides, the competition entails heavy specific expenditures, such as managerial and advertising costs.

Many other issues could also be mentioned among the regulator challenges. I will only name 2 of them:

-- **competition**: "Traditional" insurers are not the only actors on the private health insurance market, there also being a considerable number of mutual companies and other organisations such as managed care organisations. These various operators are in many cases subject to different prudential and tax regulations. This is raising several problems. Besides, should competition issues be analysed in the context of private health insurance or, more generally, in the broader context of health insurance (in order to take account of the blurring of the distinction between public and private)?

-- **Information access**: Private health insurance requires that risks be identified and classified. This involves having access to certain types of information and being able to segment risks on the basis of certain criteria. However, access to and divulgation of medical information as well as risk segmentation raises sensitive issues? Preventing abuses in this area is far from an easy task.

4.2 *Policy responses to new challenges: OECD countries experience*

Several OECD countries have recently initiated regulatory reforms and changes in the design of their health insurance organisation in order to circumvent the major drawbacks entailed by the development of private health insurance.

4.2.1 Innovative regulatory policies to remedy to market failures

With a view to maintain an equilibrium between efficiency and competition on the one hand, and equity on the other hand, OECD member countries are experimenting various paths:

• To avoid major inequities or excessive rise in premiums, **group insurance contracts** have been favoured by the regulation in the US, as well as in Portugal or Italy more recently. However, as explained above, group policies have also their shortcoming in excluding part of the non-working population or less favoured people. Community rating is another way to avoid major inequalities but it may result in less competitive and rather oligopolistic market.

A second way to tackle the equity issue is to consider private health coverage as a **long- term risk**. This perspective is consistent with new products sold on the market such as long-term care and may be dealt with using various financial vehicles. In Switzerland proposed reforms concerning health insurance involve that **age at issue** be the **reference age for successive policies** taken out with the same insurer. This would prevent insurers from increasing premiums with age and oblige them to support part of the risk for ageing. Private health insurance should be accessible in the same way and at the same price for men and women. Furthermore, this reform would imply that insurers could no longer be allowed to launch a new product providing exactly the same cover, with the sole aim of creating a closed fund of selected policyholders.

The improvement of the **portability of rights** is also high on the political agenda. The US 1996 law (Health Care insurance portability and accountability act) or the Austrian legislation in this regard ensure that previous benefits can be retained after a change of employer in order to avoid job-locks. This problem can also be addressed in preventing insurers to cancel policies or to retain pre-existing conditions and waiting periods for individuals who were already covered by health insurance.

Further on this line, the **funding or partial funding** of private health insurance, as in Germany or Austria, may appear as a promising solution.

Other new developing trends could briefly be pointed out inter alia:

- the new regulation on compulsory long-term care insurance in Germany
- the surge of new private health insurance products, such as medical savings accounts in the United States,
- the marketing of private health care electronic cards by insurers in Portugal,
- or lastly the establishment of equalisation funds between insurers in Ireland.

4.2.2 Curbing the costs through health care?

In a several OECD countries, the unbearable increase in health expenditures has fostered the development of private carriers in charge of controlling providers' activity. This attempt can range from **formal agreements between insurers and specific providers to the so-called managed care** mainly developed in the US through Health maintenance Organisations or HMOs. Under this arrangement, the financing and delivery of health services are integrated so as to control costs by managing the recourse to health providers and the providers' payment level. In the US, more than 80% of the insured population were enrolled in Managed care organisations in 1998. Through HMOs in particular, insured receive a comprehensive benefit package available form a defined network of providers for a fixed payment.

Although, these organisations are similar to small private British National Health System, and are thus affected by the same drawbacks: restricted freedom of choice for consumers. Consumers concerns in this respect have led to the promotion of more flexible alternative models. These are the Preferred Provider organisation (PPO) - a kind of agreement contracts between insurers and providers. Both HMOs and PPOs can also be mixed. Latest research for the US suggested that HMOs are able to save 20 to 30 % of expenditures compared to traditional health insurance organisation. However, this results may be more linked to selected low-risk population than real curtailment in unnecessary consumption.

Such types of arrangement are also developing in other OECD countries (*inter alia* in 4 Austrian länders, in Greece, France, the United Kingdom or Poland), most of the time in the form of agreements between insurers and providers,

In addition, new forms of private managed care are being experimented in **Portugal**: managed care companies involve a **medically formed call centre** that operates 24 hours a day. This structure is aimed at providing a customised service to each policyholder and to direct them to the most appropriate health care service. The new organisation would then insured the follow-up of each patient while reducing administrative costs and unnecessary consumption.

Private health insurance has a crucial role to play in modern health care organisations. Its development is a great opportunity for an enhanced efficiency of health care provision. It is also a serious challenge for policy makers to design an appropriate regulatory framework in order to palliate to the drawbacks enduced by the development of private health care systems. The need for regulatory changes will be also a function of the extent to which private health insurance is substituting to public systems. The impact of recent regulatory changes remain to be scrutinized, while the performances of new private managers of health care provision are so far difficult to assess and rather controversial. It is foreseeable that a majority of OECD countries will continue to rely on dual health care systems. Comparative analysis and international information sharing on the results of many recent and promising experiences will become more and more crucial, in an area where demographic, technological and budgetary pressures entail innovative reforms. Through its new horizontal project on health care, the OECD will attempt to provide relevant tools for policy makers, both in member and non-member countries.



Review of Insurance Solvency Standards:

Structure and IFRS 17

Consultation document

November 2020

Current Information Available

Information about the review is available on the Reserve Bank website at:

https://www.rbnz.govt.nz/regulation-and-supervision/insurers/consultations-and-policy-development-forinsurers/active-policy-development/review-of-the-insurance-solvency-standards

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Publication of submissions:

All information in submissions will be made public unless you indicate you would like all or part of your submission to remain confidential. Respondents who would like part of their submission to remain confidential should provide both a confidential and public version of their submission. Apart from redactions of the information to be withheld (i.e. blacking out of text) the two versions should be identical. Respondents should ensure that redacted information is not able to be recovered electronically from the document (the redacted version will be published as received).

Respondents who request that all or part of their submission be treated as confidential should provide reasons why this information should be withheld if a request is made for it under the Official Information Act 1982 (OIA). These reasons should refer to section 105 of the Reserve Bank of New Zealand Act 1989, section 54 of the Non-Bank Deposit Takers Act, section 135 of the Insurance (Prudential) Supervision Act 2010 (as applicable); or the grounds for withholding information under the OIA. If an OIA request for redacted information is made the Reserve Bank will make its own assessment of what must be released taking into account the respondent's views.

The Reserve Bank may also publish an anonymised summary of the responses received in respect of this Consultation Paper.

Published by the Reserve Bank of New Zealand 30 November 2020

Glossary

AASB	Australian Accounting Standards Board
BEL	Best Estimate Liability
СТV	Current Termination Value
D-SIB	Domestically Systemically Important Banks
DAC	Deferred Acquisition Cost
DTA	Deferred Tax Asset
DTL	Deferred Tax Liability
ESR	Escalating Supervisory Response
FMA	Financial Markets Authority
FSAP	IMF Financial Sector Assessment Programme
GAAP	Generally Accepted Accounting Principles
IAA	International Actuarial Association
IAIS	International Association of Insurance Supervisors
IASB	International Accounting Standards Board
ICAAP	Internal Capital Adequacy Assessment Process
ICP	Insurance Core Principles
IFRS 4	International Financial Reporting Standard 4 – Insurance Contracts
IFRS 17	International Financial Reporting Standard 17 – Insurance Contracts
IMF	International Monetary Fund
IPSA	Insurance (Prudential Supervision) Act 2010
IPSA Review	Review of the Insurance (Prudential Supervision) Act 2010
LAGIC	Life and General Insurance Capital Standards
ORSA	Own Risk and Solvency Assessment
RBNZ	Reserve Bank of New Zealand
Regulations	Insurance (Prudential Supervision) Regulations 2010
RPG	Related Product Group
Solvency II	The European Union's prudential framework for insurers

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Executive summary

Background

Under the Insurance (Prudential Supervision) Act 2010 ("IPSA"), the Reserve Bank is responsible for the prudential supervision of the insurance industry. We¹ regulate and monitor insurers to ensure that the sector operates in a sound and efficient manner.

A key part of this supervision involves imposing minimum amounts of capital that insurers must hold. These regulatory capital requirements set a minimum likelihood that insurers will be able to pay claims and meet other obligations to policyholders.

We codify our capital requirements for insurers in a set of solvency standards prescribing how regulatory minimum capital is to be calculated. The current standards were published in 2014, with different standards for each sector and variations for specific circumstances.

In October 2020, we announced the start of the Solvency Standards Review ("the Review") alongside the IPSA Review. We feel it is timely to review the standards to ensure that they are robust and fit for purpose. It is also a chance to address the findings from recent reviews of supervision and prepare the standard for the implementation of IFRS 17.

The review will be divided into two stages:

- 1. The first stage (now underway) will address structural changes and other issues that require immediate attention (including IFRS 17).
- 2. The second stage will address the determination of individual components of the solvency requirements (asset risks, liability risks, other components).

We will introduce interim standard(s) at the end of the first stage and final standard(s) at the end of the second stage.

In conducting the Review, we will take into account efficiency considerations from both the industry as well as our perspective.

Consultation topics

This consultation document relates to the first stage of the review. It is concerned with the issues that shape the standard's fundamental structure and nature. These are discussed below and need to be addressed before work begins on more detailed considerations.

Purpose & principles

While IPSA provides general purposes and principles to govern regulation and supervisory activity, and empowers the solvency standards, it provides no specific purpose for holding regulatory capital. We propose that the purpose of holding regulatory capital is to ensure that, in adversity, an insurer's obligations to policyholders will continue to be met in full as they fall due. This consultation also canvasses your views on two matters of principle:

1. Whether we should adopt a total balance sheet approach to capture second-order effects and balance sheet interactions;

¹ In this document, the pronouns "we", "us" and "our" refer to the Reserve Bank of New Zealand, unless otherwise specified.

2. Whether there are certain "sectorally important" insurers that are critical to the functioning of New Zealand's financial system and who should be treated differently for capital purposes compared to "non-sectorally important" insurers.

Applying the standards

IPSA empowers the application of standards to insurers and, for life insurers, to their statutory funds. We have chosen to issue separate standards for life and non-life business, as well as standards for insurers in specific circumstances (non-life insurers in run-off, non-life captives and variable annuity providers). Standards are applied by condition of licence to insurers as a whole and, if applicable, their statutory funds.

In this document we ask if our approaches to applying the solvency standards to industry sectors and sub-entities are as efficient as they could be. In particular, we explore the possibility of having a single framework apply to both life and non-life business.

IFRS 17

The new accounting standard IFRS 17 *Insurance Contracts* ("IFRS 17") is expected to have a material impact on an insurer's balance sheet. In particular, from a New Zealand perspective there is likely to be a number of areas requiring judgement to be exercised, leading to inconsistent results across the industry.

As the solvency requirements are based on the accounting balance sheet, it follows that they may be similarly affected. To minimise any unintended consequences, we must carefully consider how different elements of the balance sheet will be affected, in particular technical insurance elements. One possible way of achieving greater consistency and comparability after the adoption of IFRS 17 is to prescribe methods and assumptions for particular balance sheet elements for solvency purposes (a "standardised balance sheet").

Ladder of Intervention

A "ladder of intervention" framework is a graduated approach to supervision. The "rungs" of the ladder open up regulatory powers and/or represent triggers for specific supervisory intervention. Above the top rung of the ladder, normal supervision² applies. Below the bottom rung, the supervisor would invoke the strongest actions (including potentially winding up the entity or withdrawing its licence). In between these two points, a graduated approach to supervision applies, with supervisory powers and intervention increasing in intensity as the solvency measure approaches the bottom rung.

A ladder of intervention framework may help in early intervention and could maximise the chances of recovery for an insurer in distress. It also provides greater clarity for both the supervisor and the entity, and ensures more proportionate supervisory interventions. The IAIS has endorsed this framework as best practice.

Both Trowbridge and Scholtens, in their report into the supervision of CBL, as well as the IMF's FSAP, described New Zealand's current solvency framework as "binary" in that the framework has only one rung. An insurer with a solvency ratio of 100% or greater is considered solvent, while as soon as the solvency ratio falls below 100%, the same insurer is considered insolvent. This triggers a number of powers under IPSA, including the option to liquidate the insurer. In reality, however, a solvency ratio below 100% may not necessarily mean the insurer's operations are nonviable and should be liquidated. On the other hand, IPSA only releases certain powers when the solvency ratio falls below 100% (allowing for licence conditions), making early intervention and recovery difficult.

² With intensity of monitoring related to the risks presenting in the insurer's business

We would like to consult on whether a ladder of intervention framework would be appropriate in a New Zealand environment. The diagram below compares the current framework (the bar on the right) to the proposed banking framework (the bar on the left), along with a potential insurance framework (middle bar). The lines representing the rungs in the middle bar are for illustration only, and do not necessarily indicate a top rung that is less or more conservative than the current solvency margin.



At this stage, we are not expressing any specific views relative to the current regime. Nor are we yet considering *where* specifically the rungs of the ladder should be placed, but rather exploring the theoretical underpinnings of what such a framework could look like: that is, on what basis should the solvency control levels be set? However, we would also be interested in submitters' views on where the rungs should be set.

Solvency calculation

The solvency standards allow for the fact that certain assets on the balance sheets may not be (fully) recognisable in the event of a wind-up through the use of a deduction from capital. Assets whose value might be questionable if an insurer needs to be wound up are completely deducted from eligible capital. However, a capital charge approach³ may be more appropriate in some scenarios. This consultation considers which assets should be treated using a capital charge approach and which should be treated using a deduction approach.

Solvency standards also do not perfectly allow for the risk profiles of individual insurers. Where solvency standards do not provide the required level of security, we may occasionally impose an additional requirement through a condition of licence. These extra requirements do not, however, form part of solvency ratios and margins that are publicly disclosed. This document explores the idea of giving us the power to impose supervisory adjustments within the solvency calculation.

In theory, insurers with diverse, partially-related risks should be subject to lower capital requirements than insurers whose risks are concentrated in a particular area. This is because it is less likely that multiple uncorrelated (or imperfectly correlated) risks would crystallise during a period of time than a single risk. This document explores the possibility of including an allowance for diversification in the solvency standards, and of establishing a clear hierarchy of risks to facilitate this.

Another area which could be clarified is the nature of the life insurance risk capital charge. Currently this takes the form of a stressed liability rather than a capital measure. This document proposes amending the calculation in the life standard such that the life insurance risk capital charge becomes a capital measure.

Grouping of policies and the cross-subsidies available between them in the solvency calculation are another area of focus. This document considers a range of options for grouping, together with underlying philosophies and practical outcomes.

³ A capital charge approach involves an addition to regulatory capital requirements, rather than disallowing the asset (or a portion of it) for solvency purposes.

Background to the consultation

Introduction

- New Zealand's insurance sector is regulated under the Insurance (Prudential Supervision) Act 2010 ("IPSA"). Prudential supervision of insurance entities focuses on the regulation and monitoring of insurers to ensure the financial system continues to operate in a sound and efficient manner.
- 2. Part of ensuring the continued soundness and efficiency of the insurance sector involves imposing minimum amounts of capital that insurers must hold. These regulatory capital requirements serve the purpose of increasing the likelihood that insurers will be able to pay claims and meet other obligations to policyholders.
- 3. The Reserve Bank's capital requirements for insurers are specified in a set of solvency standards, which prescribe the manner in which regulatory capital is to be calculated. The main standards are the solvency standard for life insurance business 2014 and the solvency standard for non-life insurance business 2014. These are supported by standards dealing with specific situations, e.g. run-off insurers, captive insurers and variable annuities. These standards are empowered by Section 55 of IPSA.

Drivers of change

- 4. There have been a number of developments since the standards were introduced that require a response from us. These include:
 - The 2016 IMF review of New Zealand's financial system (FSAP);
 - Our thematic review of the appointed actuary regime;
 - The introduction of new capital regimes in comparator markets; and
 - A new accounting standard for insurance contracts.
- 5. Supervisory experience over recent years has also provided valuable insight into the operation of the framework. It has identified some areas where the standards could be improved. The events associated with the liquidation of CBL Insurance Ltd. have been particularly illuminating.

The Review

- 6. Best practice regulatory stewardship⁴ includes monitoring and reviewing existing regulations at appropriate intervals to ensure they are robust and fit-for-purpose.
- In October 2020, we announced the commencement of a review of the insurance solvency standards ("the Review") alongside a re-commencement of the review of the Insurance (Prudential Supervision) Act 2010.⁵
- 8. As part of this announcement, we asked for public submissions on the proposed timelines and on the review's principles. Following the closure of the consultation on 12 November 2020, we are taking into consideration the feedback received and will publish a formal response at a later date.
- 9. This consultation document addresses issues relating to the structure of solvency requirements and calculations. Submissions received will inform the development of interim solvency standards later in 2021. The full timeline is shown below. We consider the issues discussed in this paper to be fundamental in nature and needing be resolved before we address issues of detail in a subsequent stage of the review.

⁴ <u>https://treasury.govt.nz/information-and-services/regulation/regulatory-stewardship</u>

⁵ <u>https://www.rbnz.govt.nz/news/2020/10/reserve-bank-relaunches-insurance-act-review</u>

Consultations	2020	2021				2022				2023			
	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Principles of review	Done												
Structural changes		In pr	ocess										
Interim standard													
Calibration exercise													
Asset charges													
Liability charges													
Other components													
Final standard													
Calibration exercise													

1. Principles and purposes

1.1 Purpose statement

- 10. There is no specific purpose for holding capital expressed in either IPSA or the solvency standards themselves. IPSA does however contain purposes and principles that have some bearing on the issue, for example soundness of and public confidence in the sector, sound governance and effective risk management.
- 11. It may be helpful for this review to have a clear picture of what the standards are trying to achieve by asking insurers to hold regulatory capital. For example, an explicit purpose statement would reduce ambiguity and provide a clear direction as to the Reserve Bank's regulatory objectives. It could also encourage better compliance with the standards by increasing understanding.
- 12. The ICPs provide the following statement:

"The purpose of capital is to ensure that, in adversity, an insurer's obligations to policy-holders will continue to be met as they fall due."

13. "Adversity" is often defined in probabilistic terms, for example as the Xth percentile of a distribution of an insurer's change in net assets over a period. "Met" implies payment in full.

Questions for consultation:

- A. Would a purpose statement be a useful addition to the solvency standards? Why or why not?
- B. Please comment on the usefulness of the purpose statement above and suggest improvements, if any.
- C. How likely should the fulfilment of obligations by an insurer be (recognising that certainty is an impossibility, and that there is a trade-off with efficiency and competition)?
- D. Should the solvency risks be assumed to crystallise immediately, in the short-term (say one year) or over the long-term?

1.2 Principles

1.2.1 Total balance sheet

- 14. The International Association of Insurance Supervisors ("IAIS") recommends that certain principles should underpin the determination of solvency capital. One of these is the "total balance sheet approach". ICP 17 defines a total balance sheet approach as recognising the interrelationships between assets, liabilities and capital requirements. Essentially this means that stresses used to determine solvency capital should be applied to all items on the balance sheet, not just those that they primarily influence. It also means taking into account linkages between different parts of the balance sheet. Note that the total balance sheet approach refers to an overall concept, rather than a particular methodology.
- 15. For example, the interest rate risk charge assumes a step change in the level of market interest rates. The primary effect of this stress is to change the value of items (e.g. bonds, policy liabilities and lease commitments) that make use of interest rates to discount future cash-flows. The stress may also, however, create other effects on the balance sheet, for example through changes in policyholder behaviour (changes in surrender rates for investment-linked and participating products) or in inflation expectations. Under a total balance sheet approach both primary and secondary effects should be taken into account, if material.
- 16. The current solvency framework is not considered a total balance sheet approach.
- 1.2.2 Systemic and sectoral importance
- 17. Following the Global Financial Crisis of 2008-09, there was a push internationally to recognise "systemically important insurers" and require them to hold higher levels of capital due to their importance in the financial system. The IAIS' assessment of (global) systemic importance centred around five broad indicators size, global activity, interconnectedness, asset liquidation and substitutability.⁶
- 18. As well as recognising the importance of identifying globally systemically important institutions, some national regulators have also identified institutions that are systemically important in a domestic context. For example, in our review of bank capital requirements, we have required domestically systemically important banks ("D-SIBs") to hold extra capital relative to non-systemically important banks.⁷
- 19. With respect to insurers, we are guided by the purposes and principles of both the Reserve Bank Act and IPSA. The former relates to financial stability, while the latter relates to the soundness and efficiency of the insurance sector, and public confidence in the sector.
- 20. We recognise that New Zealand insurers may not be as interconnected as New Zealand banks and therefore the failure of a large insurer may not have the same impact on financial stability as the failure of a large bank. However, a healthy financial system needs the support of a resilient insurance sector, and so it may be useful to identify sectorally, rather than systemically, important insurers.
- 21. Resilience generally relates to insurers' continued ability to operate even after a major adverse event, especially for insurers who play a dominant role in the market. One way to achieve this is potentially by way of higher solvency requirements for those "sectorally important insurers" relative to non-sectorally important insurers.
- 22. At the same time, we recognise that the benefits of greater resilience of major insurers must be balanced with considerations around efficiency and competition.

⁶ IAIS, 2016: "Global Systemically Important Insurers: Updated Assessment Methodology"

⁷ See <u>"Capital Review – Decisions 2019"</u>

Questions for consultation:

- E. Should a "total balance sheet approach" be adopted for solvency calculations?
- F. Do you think there are insurers that are "sectorally-important"? If so, what would be the advantages and disadvantages of imposing higher capital requirements on them, relative to those that are considered not sectorally-important? Please provide your reasons.

2. Application of the Solvency Standards

2.1 Background and Legal Basis

- 23. Insurers writing life business are subject to the "Solvency Standard for Life Insurance Business 2014" ("the life standard"), while insurers writing health or general insurance business are subject to the Solvency Standard for Non-Life Insurance Business 2014" ("the non-life standard"). Composite insurers may be subject to both standards simultaneously.
- 24. There are a number of other complications in the application of the standards:
 - The life standard applies not only to the insurer, but separately to its statutory funds and life funds.
 - Standards that apply to particular types of insurers (for example captives or insurers in run-off, with modified prescribed solvency assumptions).
 - Standards that rely on another standard (for example the Solvency Standard for Variable Annuities 2015 ("the VA Standard"), which relies on many provisions of the Life Standard).
 - For mono-sectoral insurers, capital and free assets are treated by the solvency standard for the sector in which they operate. For composite insurers, selecting a standard to deal with this business is less clear.
- 25. IPSA governs the application of solvency standards:
 - Section 21(2) allows conditions of licence to require an insurer and/or its statutory funds to maintain solvency margins or minimum capital.
 - Section 55(2) states that a solvency standard can apply to all insurers, to one or more classes⁸ of insurer or to specified insurers.

2.2 Industry Sectors

2.2.1 Status

- 26. At the sectoral level, New Zealand's approach since solvency standards were introduced in 2011 has been to maintain separate standards for life and non-life insurance business. Health insurance, due to its generally short-term nature, has been accommodated in the non-life standard. Long-term classes of non-life insurance are catered for in the non-life standard by a requirement to have regard to the life standard principles.
- 27. Other approaches have, from time to time, been followed in other jurisdictions. For example, before the introduction of Solvency II, the UK's Prudential Regulatory Authority mandated separate approaches for long-term business (whether life, health or non-life) and short-term business. Similarly, Solvency II is an integrated approach covering all types of insurers.
- 28. Conceivably, it is possible for a New Zealand insurer to be subject to three solvency standards simultaneously the life standard, the variable annuity standard and the non-life standard. A number of insurers have both life and non-life business on their books, and so are subject to two standards.

⁸ "Class" is not a defined term.

2.2.2 Issues

- 29. We have observed a number of issues (or potential issues) with the way the solvency standards address various industry sectors:
 - The standards have much in common and would be easier to upgrade if they were a single document with variations only at the component level as required.
 - In addition to the contingency (life, disability, non-life), there are other factors that may also be important in directing solvency treatment. One such factor may be for how long the insurer is obligated to the policyholder. It is possible that the current solvency standards do not address the term of the contract appropriately. For example, the non-life standard allows considerable discretion regarding the treatment of contracts with long term risk characteristics.⁹
 - The life and non-life standards are inconsistent with respect to some of the capital charges. For example, AA-rated debt with a remaining term of less than one year has a resilience capital factor of 1% in the non-life standard and 2% in the life standard. It may also not be clear which standard governs assets not backing insurance liabilities.
 - Health business isn't specifically addressed in an explicit solvency standard. It is simply allocated to life or non-life as the case may be. This means that health insurance policies sold by life insurers and those sold by non-life insurers may be treated differently. In particular, life insurers may treat health insurance as a long-term product, while non-life insurers may treat it as a short-term product.
 - Definitions and use of aggregate solvency measures need clarifying.
 - The integration between the VA Standard's capital charge and the life standard's Insurance Risk Capital Charge is imperfect. This is because it is unclear whether the former takes the form of a capital stress or a stressed liability.

Questions for consultation

- G. Please comment on how effectively existing solvency standards address particular sectors and subsectors of the industry.
- H. Should health insurance have its own specific solvency approach? Please provide your reasoning.
- I. Please discuss your preferences with respect to how the standards should apply to industry sectors, with reference to the following options:

Option	Description	Advantages	Disadvantages
1	Sector-differentiated status quo – separate Life and Non-Life Standards	Least cost for industry as would not require the industry to change its calculation methodologies.	Potential inconsistencies and more complex upgrade path.
2	Single solvency framework covering all sectors and subsectors	Streamlined approach and less potential for inconsistency.	Higher cost to industry as industry would be required to make significant changes to their calculation methodologies.

⁹ Paragraphs 41-44 of the non-life standard

			Risk that sector-specific risks may not be accurately captured.
3	Rationalisation – folding the variable annuity standard into the life standard, and the three non-life standards into a single document	Would address some of the issues listed above relating to inconsistency, while still explicitly allowing for sector- specific differences.	Potentially minor costs to affected insurers.

2.3 Statutory and other funds

2.3.1 Status

- 30. Sections 82-119 of IPSA establish a requirement for insurers to maintain statutory funds for their life insurance business.¹⁰ These funds are designed to specify a pool of assets that support obligations under life insurance policies and prevent them from being misused. They also allow investment performance to be tracked so that linked benefits can be determined correctly.
- 31. The provisions have rules requiring certain income to be credited to a fund and restricting the expenses that can be paid out of it. This sets up a de-facto minimum asset requirement on an accumulation basis.¹¹ Assets held in statutory funds are generally higher than this requirement, however. This is because the Life Solvency Standard is applied to the fund as well as the insurer, and this standard requires the fund to hold assets against stresses as well as policy liabilities.
- 32. The life standard refers to statutory funds (as defined in IPSA), which are a type of of 'life fund'. Business outside of statutory funds also constitutes a life fund. The non-life standard does not address fund structure within the insurer.
- 33. Both major standards define aggregate solvency measures. For example, the aggregate minimum solvency capital is defined as "the sum of the minimum solvency capital determined for each individual solvency margin required to be maintained by the licensed insurer".

2.3.2 Issues

- 34. There are a number of potential issues relating to how the solvency standards are applied to statutory funds and other funds:
 - Health insurance can be treated differently depending on applicable accounting standards and licence conditions.
 - Solvency requirements applicable to life funds other than statutory funds are not necessarily secured by a defined pool of assets.
 - The minimum net asset requirement in Sections 82-119¹² may potentially be different to the solvency standard requirement.
 - Definitions of aggregate measures could be taken to include the insurer's overall solvency requirements as well as the fund-level requirements.

¹⁰ There are currently no requirements for non-life insurance business to be housed in statutory funds.

¹¹ Refer to Section 83 of IPSA

¹² This is a requirement to accumulate premiums and investment income within the fund, together with restrictions on expenses allowed to be paid by the fund.

Questions for consultation

- J. Please comment on how effectively existing solvency standards address statutory and other funds.
- K. Should solvency standards applied to statutory funds apply a floor to assets based on the provisions of Sections 82-119?
- L. Please discuss your preferences with respect to how the standards should apply to statutory and other funds, with reference to the following options:

Option	Description	Advantages	Disadvantages
1	Status quo – life insurers have solvency requirements for statutory funds and the insurer as a whole; non-life insurers have requirements only at the insurer level.	No disruption to insurers.	Minimum assets determined at the current level may not be sufficient to resolve all blocks of business for an insurer in distress.
2	All business allocated to 'insurance funds'. ¹³ Solvency requirements are only applied at the insurer level, although these requirements will be a function of fund solvency.	Facilitates resolution of all blocks of business.	May result in increased costs (administrative and capital) for insurers.

2.4 Consolidation

- 35. The solvency standards apply to licensed insurers and any of their subsidiaries that are also licensed insurers. The requirements apply to each entity individually as well as to the group as a whole. Non-insurance subsidiaries are not captured explicitly under the group solvency requirements, but are treated as either a related party investment, subordinated loan, or other obligations.
- 36. This treatment may not reflect the economic reality of the non-insurance subsidiary's contribution to the parent's balance sheet. As a result, this may distort the solvency position of the insurance group. It may be appropriate to look through to the assets, liabilities and risks of the non-insurance subsidiary.

Questions for consultation

- M. In your view, is the current treatment of insurance and non-insurance subsidiaries in the solvency standards appropriate? Please provide your reasons.
- N. If your answer to the previous question was "No", what do you feel would be a better treatment of insurance and non-insurance subsidiaries?

¹³ Insurance funds would include statutory funds and other pools of assets deemed to be providing security for specific types of policy liability.

3. Dealing with the impacts of IFRS 17

3.1 Background

- 37. In May 2017, the IASB released a final version of a new international accounting standard for insurance contracts, IFRS 17 *Insurance Contracts* ("IFRS 17"). IFRS 17 replaces the current standard IFRS 4, and is intended to increase transparency and reporting consistency internationally.
- 38. IFRS 17 will have a significant impact on how insurance liabilities and related assets on the balance sheet are determined. It will also impact on solvency calculations as New Zealand's solvency standards are based on the accounting balance sheet.
- 39. From a New Zealand perspective there are likely to be several areas that require judgement. This could in turn lead to financial and solvency results that are inconsistent and not comparable across the industry.
- 40. Not all parts of the balance sheet will be equally affected technical provisions are likely to be the most affected, while non-technical insurance and non-insurance specific items may be less affected. We are exploring the possibility of using a "standardised balance sheet" structure as part of our response to IFRS 17.
- 41. For this discussion, a "standardised balance sheet" is defined as one where adjustments have been applied to ensure as much consistency as possible across the industry. These adjustments may, for instance, take the form of specific requirements for discount rates and other assumptions, or prescribe the method for valuing insurance liabilities.
- 42. A standardised balance sheet for solvency purposes may or may not be based on the accounting balance sheet. One possible way of achieving greater consistency and comparability after IFRS 17 has been adopted is to prescribe specific methods and assumptions for particular elements of the balance sheet for solvency purposes. However, at the same time, we must balance this with efficiency considerations from both the industry's and our perspective.
- 43. The discussion will be separated into two sub-sections: the first encompassing the "technical" portions of the balance sheet (that is, insurance liabilities and other related items including deferred acquisition costs and deferred reinsurance expenses), and the next dealing with other components of the balance sheet.

3.2 Insurance liabilities and other technical provisions

3.2.1 Introduction

- 44. This section will discuss a number of different forms that a standardised balance sheet could take.
- 45. The scope of this sub-section is the calculation of technical insurance provisions and related assets. This includes:
 - life insurance policy liabilities
 - outstanding claims liabilities
 - premium liabilities including unexpired risk provision
 - deferred acquisition costs
 - reinsurance of the above

46. For the purposes of this section, the following distinction will be used:

Accounting balance sheet	Balance sheet used for financial reporting purposes. Assets and liabilities on the balance sheet are valued on a Generally Accepted Accounting Principles ("GAAP") basis.
Solvency balance sheet	Balance sheet used as the starting point for solvency calculations. This is <i>before</i> the application of any stresses. This balance sheet will be used as the base case for solvency stresses.
Stressed balance sheet	Balance sheet after the application of solvency stresses (solvency stresses applied on the solvency balance sheet components, including any adjustments to asset values). This is the basis that will be used to assess the sufficiency of the company's assets.



47. This discussion will focus on the solvency balance sheet. Throughout this document, any reference to a "standardised balance sheet" will be in relation to the solvency balance sheet. The accounting balance sheet, while important to understand from a regulatory point of view, is not within the regulator's jurisdiction to specify. The stressed balance sheet will be discussed during a later stage of the solvency standard review.

3.2.2 Solvency balance sheets

- 48. While solvency capital requirements are a common feature of insurance regulation in most developed jurisdictions, the accounting basis on which the solvency requirements are calculated may vary between jurisdictions.
- 49. At one end of the spectrum is the regulatory balance sheet. This is where the regulator specifies the valuation method and assumptions for each item on the balance sheet to be used as a starting position for solvency purposes. Under this approach, the solvency balance sheet is completely independent of the accounting (GAAP) balance sheet.

- 50. In contrast, some regulators use the GAAP balance sheet for solvency purposes. The GAAP approach values assets and liabilities for solvency purposes according to the jurisdictional accounting requirements on an unadjusted (or minimally adjusted) basis. This approach assumes implicitly that the accounting requirements provide a reasonable estimate of the assets and liabilities for solvency purposes.
- 51. Other regulators opt for a more in-between approach, where the GAAP balance sheet is used as a basis for solvency, but with adjustments for material assets and liabilities. Under this approach, which will be referred to as the "GAAP-adjusted approach", the regulator may specify both the valuation method for these material components as well as the assumptions to be used in the valuation.
- 52. A comparison of the approaches used under a number of international frameworks has been included in Appendix 1.¹⁴
- 53. New Zealand's solvency standards are currently mostly based on the NZ GAAP balance sheet.¹⁵ The applicable GAAP standard for insurance liabilities in New Zealand is currently NZ IFRS 4. This has a specific requirement that assets backing insurance liabilities be valued under a fair value (or similar) basis. Assets not backing insurance liabilities are valued using the applicable NZ IFRS. However, as most insurers designate all assets as supporting insurance liabilities, all assets on the balance sheet are typically valued using fair value.
- 54. As mentioned earlier, the introduction of IFRS 17 is expected to have a significant impact on the insurance liabilities and hence on solvency calculations. To minimise any unintended consequences, we must fully consider and understand the extent to which IFRS 17 will impact the solvency position, and the potential avenues available to respond to IFRS 17.
- 55. The following discussion will describe the main areas of the solvency calculations that are expected to be impacted by IFRS 17. We will then touch upon the international benchmark for solvency valuation as specified by the ICPs, as well as the FSAP's assessment of New Zealand's alignment with the benchmark. With these in mind, we will present a number of possible approaches to address the solvency impacts of IFRS 17.

3.2.3 IFRS 17 impacts on solvency

56. The main areas of difference between NZ IFRS 4 and IFRS 17 that may have an impact on solvency calculations have been included in Appendix 2. These issues highlight the importance of a response from us. Without action from us, the solvency standards could cease to provide an accurate reflection of financial strength, as the insurer's true financial strength would be somewhat disguised by the choice of valuation method and other judgements applied. In addition, the risk charges may need to be recalibrated in order to achieve the target risk criterion.

3.2.4 International benchmark

57. Alignment with international standards is an important consideration when developing solvency standards. At the same time, what is appropriate for the New Zealand environment must be considered. International best practice, as benchmarked by the ICPs, shows that valuation of assets and liabilities for solvency purposes should reflect an economic valuation.

¹⁴The choice of international frameworks used in the comparison has been influenced by the frameworks listed in Principle 1 of the review, as outlined in this <u>consultation paper</u>.

¹⁵ With the exception of non-life premium liabilities – the accounting standards require premium liabilities to be calculated on a retrospective basis, whereas the solvency standards require premium liabilities to be valued using a prospective (projection) approach.

- 58. <u>ICP 14</u> defines an economic valuation as "a valuation such that the resulting assessment of an insurer's financial position is not obscured by hidden or inherent conservatism or optimism in the valuation". To achieve an economic value, the valuation of assets and liabilities on the solvency balance sheet should reflect a current, prospective valuation of the future cash flows, allowing for both the riskiness of those cash flows as well as the time value of money.
- 59. For assets in a deep and liquid market, the current quoted market value is generally seen as an economic value, as the price is considered to already incorporate any risk premiums. However, for insurance liabilities where there is no active market, an economic value can be achieved by including a margin to allow for uncertainty on top of the best estimate liability. Note that there is no specific guidance in ICP 14 regarding the size or form of the margin for uncertainty.
- 60. The assessment of New Zealand's compliance with ICP 14 is covered in the FSAP, but is summarised again here. The FSAP considers that the valuation of assets and liabilities for solvency purposes is largely observant to the ICPs that is, New Zealand uses a proxy for economic valuation. This conclusion was based on:
 - Non-life insurance liabilities are calculated as the sum of the central estimate (the mean) and a risk
 margin, which the solvency standards have specified to be at a 75% probability of sufficiency. The central
 estimate represents the present value of future claims cash flows, for both claims that have been incurred
 (outstanding claims liabilities), and claims that have not yet been incurred (Premium Liabilities).
 - Life insurance policy liabilities (including health insurance by life insurers) are valued as the sum of a best estimate liability and the present value of profit margins. The FSAP considered the latter a prudent margin over best estimate (though unlike the risk margin for non-life liabilities this is not calibrated to any sufficiency level).
 - Assets backing insurance liabilities are required under NZ IFRS 4 to be valued using a fair value (or similar) basis. As insurers typically allocate most of their assets as backing insurance liabilities, it follows that for most insurers, all assets are valued on a fair value basis. In the solvency calculations, adjustments (in the form of deductions or risk charges) are then applied for assets with reduced or nil value under a stressed scenario.

3.2.5 Options

- 61. The actions available to us in addressing the areas of IFRS 17 that impact technical insurance liabilities (and related assets) can be grouped into four broad categories:
 - Option 1 (status quo) continue to require NZ IFRS 4 for solvency purposes
 - Option 2 (GAAP) continue to use the GAAP balance sheet after transition to IFRS 17, and make no changes to the solvency standard.
 - **Option 3 (GAAP with adjustments)** use GAAP where it makes sense, but make adjustments for certain areas/parameters. There are varying degrees of prescription involved with this method.
 - **Option 4 (full regulatory balance sheet)** Ignore GAAP entirely and specify a separate set of regulatory reporting requirements.
- 62. We consider Options 1 and 2 above (status quo and GAAP) unlikely to be realistic in practice, but have included them as we recognise the importance of acknowledging all the available options. This will allow us to gain a more complete understanding of the impacts of each alternative relative to the status quo.

Option	Description	Advantages	Disadvantages
Option 1: Status Quo	Continue to require IFRS 4 for solvency purposes, even after transition to IFRS 17, with no changes to the solvency standard.	 Low implementation cost for us No (upwards or downwards) spike in solvency ratios after transition, and hence easier for the public to understand 	 Burden on industry to maintain both reporting requirements, especially for life insurers. Not robust and difficult to maintain through future generations of accounting changes.
Option 2: GAAP	Continue to use the GAAP balance sheet after transition to IFRS 17, and make no further changes to the solvency standard.	 Lower implementation cost for us and insurers Flexibility for insurers to choose what works for them (through judgements under IFRS 17) Easy to reconcile to accounts As IFRS 17 is an international standard, basing our solvency standards on IFRS 17 makes it more easily understandable and easily accessible for an overseas entity 	 Obscures true financial strength as IFRS 17 is open to judgement, so insurers with otherwise identical risks could end up with very different solvency positions. Insurers' true financial strength will be disguised by the choice of method and assumptions. Doesn't provide a consistent basis to implement a ladder of intervention approach as the solvency ratio may mean different things for different insurers. Even if there was consistency in valuation method across the whole industry, various IFRS 17 allowable approaches may not be appropriate for solvency purposes.
Option 3: GA	AP with adjustments		
Option 3a: Specify insurance liability valuation parameters	Allow insurers flexibility of choice regarding insurance liability valuation method under IFRS 17, but specify parameters to use	 Least implementation cost for insurers as they can leverage off their IFRS 17 implementation As IFRS 17 is an international standard, our solvency standards will be more easily understandable to overseas regulators and insurers (less barrier to entry) 	 Insurers may select the valuation method that works best for them (in terms of management and systems), and not necessarily have solvency in mind when selecting the valuation method. This may mean the valuation method selected by the insurer does not reflect the economic value of the product. Difficult to ensure consistency¹⁶ and comparability across industry as different insurers may treat the same product differently

¹⁶ Especially when dealing with onerous contracts, risk adjustments and the contractual service margin

Option	Description	Advantages	Disadvantages
Option 3b: Specify IFRS 17 insurance liability valuation method	Use an IFRS 17 valuation method for insurance liabilities, but specify which valuation method (and parameters) to use.	 Might be easier from an implementation point of view Comparability across industry Easy to understand from an international perspective. 	 Depending on the insurer, this might actually increase cost of implementation to the insurer if the method specified is different to what they are using. This is more likely for insurers with a small and relatively homogeneous range of products. There is still such a large range of products in the market that it might be difficult to find a one-size-fits-all approach.
Option 3c: Use a non- IFRS 17 insurance liability valuation method	Use IFRS for other parts of the balance sheet where it makes sense, but specify a non-IFRS 17 valuation method for insurance liabilities. An example of this approach would be to require Yearly Renewable Term business to be valued as long-term business rather than one-year contracts.	 Might be a better solution to reflect the economic reality of the products Consistency and comparability across industry, as well as internationally (if we are careful about how we specify the valuation method) Provides a good base for implementing ladder of intervention Robust and future-proofed, in case of future accounting standard changes 	 Higher implementation costs for insurers as they have to maintain multiple valuation systems and methods (IFRS valuation methods) Potentially confusing as fragmented requirements May not be comparable to financial statements
Option 4: Regulatory balance sheet	Ignore GAAP entirely, and specify a new set of regulatory reporting requirements. Note that by definition a regulatory balance sheet encompasses the entire balance sheet, not just the technical provisions.	 Structured and tidy as all the requirements are in one place, with no need to reference separate standards (GAAP and solvency) for different assets and liabilities Better harmonisation and consistency across industry can be achieved, while at the same time specifying a set of requirements that are appropriate for NZ, as GAAP may still allow for judgement in some areas Robust and future-proofed, in case of future accounting standard changes Good base for implementing ladders of intervention as it is standardised and consistent. 	 May lack international comparability if we choose something too NZ-specific Potentially burdensome for a small market like NZ to maintain multiple sets of accounts, from both the industry as well as the our standpoints Even harder to reconcile to financial statements. While this could be mitigated by requiring insurers to provide a reconciliation, this requirement might be viewed by industry as overly burdensome.

- 63. Note that Options 3b, 3c and 4 are each examples of the standardised balance sheet approach.
- 64. Our initial preferred options are Options 3b and 3c. In our view, these options achieve harmonisation of solvency requirements across the industry and a valuation that reflects the economic reality of the products with the most efficiency. Option 3c, while more complex than Option 3b, gives us flexibility in specifying a liability valuation approach that is deemed most appropriate for the New Zealand market.
- 65. Option 4, in our view, may be overly burdensome for New Zealand's small and relatively homogeneous market. However, we will wait for feedback from submitters around the feasibility of each of these options.

Question for consultation

O. In the context of solvency requirements, which of the above options do you consider to be the most appropriate for New Zealand? Please give your reasons.

3.3 Other (non-technical) items

- 66. While the previous sub-section discussed technical insurance items, this sub-section will focus on nontechnical insurance and non-insurance items on the balance sheet. However, as will be discussed shortly, the treatment of some non-technical elements cannot be separated from the treatment of the technical provisions.
- 67. Currently, gaps exist in our knowledge of the non-technical components of the balance sheet. One way to fill in these gaps is through this public consultation process. Once we have the necessary information, we can form more concrete proposals for change.
- 68. As before, it is important to keep in mind international best practice, which for insurance is benchmarked by the Insurance Core Principles (ICPs), published by the IAIS.
- 69. This sub-section will be structured as follows: First, there will be a brief discussion on the "total balance sheet" approach, as detailed in ICP 17. Next, we will discuss the non-technical components of the balance sheet, and the interaction with the options presented in the previous section on insurance liabilities.
- 70. Under the IAA framework for capital requirements and risk oversight, "the capital requirements and risk oversight processes in two jurisdictions with similar business, legal, economic and demographic environments and supervisory philosophy should be comparable". A cornerstone of the IAA framework is the total balance sheet approach. This was touched upon briefly earlier in this document.
- 71. One implication of a total balance sheet approach is that an insurer's financial position should be based on a consistent and meaningful measurement of assets and liabilities. This does not necessarily require full matching of assets and liabilities. However, for example, a change in interest rates should be consistently reflected in both the value of assets and liabilities, with the capital requirement changing appropriately in response.
- 72. The use of inconsistent methods and assumptions in measuring the assets and liabilities could generate hidden surpluses or deficits, and create the appearance of differing capital positions for otherwise similar insurers.
- 73. A typical insurer's assets and liabilities under IFRS 4 are shown in the table below. The shades show the degree to which the items are likely to be affected by IFRS 17 darker shades indicate more obvious and direct impacts, while lighter shades indicate a smaller and/or less direct impact. Note that for some insurers NZ IFRS 9 (Financial Instruments) also becomes effective at the same time as NZ IFRS 17¹⁷, so any changes resulting from IFRS 9 may also need to be taken into account.

¹⁷ While we have referred to IFRS 17 throughout this document, the form of the standard approved by the External Reporting Board for application in New Zealand is known as NZ IFRS 17. Differences with the international standard are minimal.

<u>Assets</u>

Cash & cash equivalents

Investments

Premium receivables

Trade and other receivables

Reinsurance receivables

Loans

Insurance contract assets

Current tax assets

Deferred reinsurance expense

Deferred acquisition costs

Reinsurance and other recoveries Reinsurance in respect of the insurance contract liability

Deferred tax assets

Right of use assets Property, plant and equipment

Intangible assets

- Investment in subsidiaries
- Goodwill
- Other assets

Liabilities

Trade and other payables Reinsurance premium payables Claims payable Unearned premium liability Outstanding claims liability Life insurance contract liability Life investment contract liability Lease liabilities Current tax liabilities

Other liabilities

- 74. The items highlighted in dark grey are technical insurance liabilities and were discussed in the previous subsection. Here we will discuss the non-technical insurance and non-insurance components, highlighted in the lighter shades.
- 3.3.1 Non-insurance items
- 75. In the illustrative balance sheet above, non-insurance items encompass all the items that have not been highlighted (cash, investments, property, etc.).
- 76. NZ IFRS 4 requires assets backing insurance liabilities to be valued using a fair value or similar basis. The FSAP notes that "many insurers designate all assets as supporting the insurance business and hence use a fair value measurement for all of the assets". IFRS 17, on the other hand, does not specify any requirements for valuing assets backing insurance liabilities. This raises the question of how the non-technical components of the balance sheet will be affected after transition to IFRS 17.
- 77. We would like to find out whether insurers, after transition to IFRS 17, will revert to the applicable accounting standard in order to value the assets and liabilities on the balance sheet, which may or may not need the use of a fair value approach. While arguably the solvency treatment of non-insurance assets and liabilities could leverage off the accounting standards, this potentially leads to further areas of uncertainty:
 - If accounting standards yield methods that are materially different to the current (fair value) basis, this may result in a change to solvency results that are not reflective of an actual change in an insurer's financial strength.
 - If the accounting standards allow significant areas of judgement, the solvency position may not be comparable across the industry.
 - Whether the accounting treatment of assets (and liabilities) is appropriate for solvency purposes.

- Even if there was consistency across the industry and the accounting standard treatment was appropriate for solvency purposes, the solvency position is not immunised against future accounting standard changes.
- How does this fit in with the total balance sheet approach and the requirement for assets and liabilities to be valued on a consistent basis?
- 78. Following from the discussion above, it appears that a natural alternative would be to require insurers to continue using fair value for solvency purposes. This would have the advantage of achieving similar treatment of the balance sheet pre- and post- IFRS 17, with the least impact from a solvency perspective as a result. Additionally, fair value is consistent with the requirement specified in ICP 14 and ICP 17. At a high level, a fair value requirement also does not appear unreasonable, given that insurers are likely to already have the systems and expertise in place to conduct a fair valuation.
- 79. However, we then need to consider whether a fair value requirement will impose an unnecessary burden on insurers, and if the rest of the balance sheet (excluding non-technical items) should also be valued using a fair value approach.
- 80. An important consideration in addressing these questions relates to principle 2 of the Solvency Standard Review Principles which states that the Reserve Bank will adopt a "substance over form" approach, and consider what is most appropriate for the New Zealand market. In particular, we are not restricted to following the treatment of accounting standards where we believe that treatment to be inappropriate.
- 81. Note that APRA specifies the asset valuation requirements for regulatory reporting purposes under reporting standards LRS and GRS 300, but adjusts all the assets to fair value for solvency purposes, as per reporting standards LRS and GRS 112.¹⁸ Solvency II requires assets and non-insurance liabilities to be valued on a fair value basis.

Questions for consultation:

- P. How do insurers currently treat non-technical insurance assets and liabilities on the balance sheet? Are all assets currently designated as backing insurance liabilities, and hence valued using the fair value approach? Are there any items (other than technical provisions) on the balance sheet that insurers are not currently measured using fair value?
- Q. How, if at all, is the treatment in (P) likely to change after transition to IFRS 17 (and IFRS 9)?
- R. Is fair value a reasonable approach to value non-technical assets and liabilities? Would an adjustment to bring all assets and liabilities on the balance sheet to fair value for solvency purposes be appropriate?

3.3.2 Non-technical insurance items

82. In the illustrative balance sheet above, non-technical insurance items refer to the insurance (premiums, claims, reinsurance) receivables and payables. These reflect rights and obligations arising under insurance and reinsurance contracts as defined under NZ IFRS 4. They have been explicitly excluded from NZ IFRS 9 (and NZ IAS 39, the old version of NZ IFRS 9). The financial statements for some insurers show that insurance receivables are sometimes measured using amortised cost with impairment provisions, but at this stage it is not clear if this approach is used consistently by all insurers.

¹⁸ LRS and GRS are reporting standards that apply to Life and General Insurers respectively.

83. Currently, most insurers account for insurance and reinsurance receivables as assets, and insurance payables as liabilities on the balance sheet, separate to the insurance and reinsurance contract assets and liabilities. Under IFRS 17, it is likely that insurance-related receivables and payables will no longer appear as an explicit item on the balance sheet, but implicitly as part of the insurance contract assets and liabilities. This treatment is shown in the diagram below.¹⁹ Premium receivables and claims payables will be consolidated as part of insurance contract assets/liabilities, and reinsurance recoveries as part of reinsurance contract assets/liabilities.



(*) Common presentation in the statement of financial position applying IFRS 4 Insurance Contracts

- 84. During the development of IFRS 17, a number of stakeholders expressed concern about combining insurance receivable and payables as a single line item on the balance sheet. They argued that presenting these separately would better reflect the nature of these items, particularly in relation to credit risk. Additionally, they argued that meeting the IFRS 17 requirements presented implementation challenges, in that the systems currently used to record receivables and payables may be separate from the insurance liability valuation system.
- 85. However, the IASB decided to continue with the existing requirements for the following reasons:
 - The principle of IFRS 17 recognises that a group of contracts create a single bundle of rights and obligations. Therefore, measuring insurance receivables and payables separately from insurance contracts would result in internal inconsistencies in IFRS 17 and potentially mislead users of the financial statements into thinking these are separate rights and obligations.
 - Reduced comparability as insurers may use different definitions of receivables and payables. While introducing a consistent definition under IFRS 17 was discussed, the IASB decided this would disrupt implementation already underway and lead to unnecessary delays in the effective date of IFRS 17.
- 86. Solvency standards currently apply a capital charge for unpaid premiums and third party recoveries (by means of the asset risk charge) and reinsurance receivables (by means of the Reinsurance Recovery Risk Charge) to reflect the credit risk associated with these items. As IFRS 17 already requires balance sheet items to reflect credit risk, an adjustment to these capital charges may be required.
- 87. Although the requirement to use probability-weighted cash flows under the IFRS 17 general measurement model essentially means that any credit risk or impairment will be allowed for implicitly, a number of considerations remain:

¹⁹ Sourced from the IASB Board Paper Agenda Paper 2A (Dec 18)

- Without specific guidance on how to allow for credit risk or impairment, insurers may reach a different view on the probability of the cash flows, leading to results that are not comparable across the industry.
- The allowance for impairment and credit risk under the simplified model may be even less transparent than under the general model. This is because the simplified model is based on a cash received basis, and not expected future cash flows.
- Do we consider credit risk associated with unpaid premiums and reinsurance recoveries to be significant? The insurer can lapse a policy after a certain number of missed payments. In addition, overdue premiums generally comprise a relatively small portion of an insurer's assets. In contrast, reinsurance receivables generally make up a more material portion of an insurer's balance sheet. Reinsurance also does not relieve the direct insurer's obligation to the policyholder – the insurer is still contractually bound to pay claims to the policyholder regardless of whether or not the reinsurer fulfils its end of the treaty. The credit risk related to reinsurance receivables is higher for classes of business where the claims take longer to settle.
- There is a possibility that insurers may not implement full system changes in order to combine the
 receivables/payables system with insurance liability valuation system. Instead, they may use a high-level
 adjustment to add the payables/receivables into the insurance contract assets/liability. If this is the case,
 it might be possible to leverage off this treatment and ask insurers to retain information about insurance
 receivables and payables for solvency purposes.

Options for valuing technical provisions	Treatment of insurance payables and receivables
3a: Allow insurers choice of valuation method under IFRS 17, but prescribe valuation parameters	No further adjustment needed to make sure that insurance receivables and payables are covered. Under this method it may be possible to standardise the allowances for impairment and credit risk through the prescribed valuation parameters. However, the question still remains as to whether or not the impairment can be easily unwound/unloaded to apply a 1-in-200 year stress.
IFRS 17 valuation method and parameters	
3c: Specify non-IFRS 17 valuation method 4: Regulatory balance sheet	May require an explicit adjustment to the balance sheet to ensure insurance receivables and payables are accounted for. This approach would require us to come up with a consistent definition for these items. However, this runs the risk of being unduly complex and burdensome for both industry as well as the Bank.
	An alternative to adding an explicit entry on the balance sheet would be to ensure these items are allowed for in the valuation of technical provisions. However, we run into a similar problem as before, in that unwinding to apply a 1-in-200 year stress may be problematic.

88. The treatment of insurance payables and receivables is not independent of the treatment of technical provisions, as shown below:

- 89. As noted earlier, overdue premiums generally comprise only a small part of the balance sheet, and the insurer can also lapse the policy after a certain number of unpaid premiums. On the other hand, reinsurance receivables comprise a larger portion of the balance sheet and do not relieve the insurer from its obligations to policyholders, and therefore arguably expose the insurer to more significant credit risk than overdue policyholder premiums. The difference in materiality also suggests that a different treatment between premium receivables and reinsurance receivables may be warranted. This may, however, come at the cost of inconsistency and additional complexity.
 - Is it necessary to have visibility of insurance receivables, and hence the associated credit risk, from a solvency perspective? If not, how do we ensure any material credit risk is properly reflected in the solvency standards?
 - How do we balance transparency, complexity and appropriate allowance for risk (materiality)?

Questions for consultation

- S. Is it necessary to have visibility of insurance receivables, and hence the associated credit risk, from a solvency perspective? If not, how do we ensure that any material credit risk is properly reflected in the solvency standards?
- T. How do insurers currently measure insurance receivables and payables (premium and reinsurance recovery receivables, claims payable)?
- U. How are insurers looking at implementing the changes relating to insurance receivables and payables resulting from IFRS 17 from a systems perspective? Are major system changes to collate the receivables/payables system with the valuation system being considered, or will separate systems be maintained, with a high level adjustment being applied to incorporate the receivables/payables into the measurement of insurance contracts?
- V. If the measurement of insurance receivables under IFRS 4 currently includes an allowance for impairment, how will insurers change the basis to determine the impairment related to insurance receivables after transition to IFRS 17?

3.3.3 Tax

- 90. Tax may be affected to the extent that it affects the recognition of profit. It is likely there will be some change in the profit recognition pattern between IFRS 4 and IFRS 17, which in turn may flow through to the deferred tax asset and liability components of the balance sheet. However, the extent to which these items will be affected is not yet clear to us.
- 91. Both the life and non-life solvency standards currently deduct the deferred tax asset ("DTA") from the calculation of actual solvency capital. This means the impact of any changes to the DTA may be mitigated. Nevertheless, understanding the tax effects are important in assessing whether the current treatment remains appropriate or if further adjustments are needed (to tax, as well as to other items). A more complete understanding of tax effects also helps achieve consistency under the total balance sheet approach. For instance, a deferred tax asset or liability that is disproportionate to the insurance liability (before any deductions) will not yield comparable results.

Questions for consultation:

- W. How are the tax items on the balance sheet likely to be impacted by IFRS 17 (and IFRS 9)?
- X. Will there be any flow on impacts of tax impacts on other insurance and non-insurance items on the balance sheet?

4. Ladder of intervention framework

4.1 Solvency control levels

- 92. ICP 17 (Capital adequacy) requires the regulatory capital framework to include at least two solvency control levels. This may trigger different degrees of intervention by the supervisor as the insurer's capital resources fall below these control levels. The intensity of the supervisor's actions should be proportional to the insurer's capital position. Higher levels of solvency are associated with lower supervisory intervention, with the level of supervisory intervention increasing as the insurer's solvency position deteriorates.
- 93. This "ladder of intervention" framework acts as an early warning sign and lets the supervisor take action early enough if an insurer falls into difficulty, making recovery more likely.
- 94. Under the ICP 17 structure, the following solvency control levels are set up:
 - Prescribed capital requirement ("PCR") this is the highest solvency control level. Above this level, the supervisor does not intervene on capital adequacy grounds. The PCR means that assets will exceed technical provisions and other liabilities with a specified level of sufficiency over a defined time horizon.
 - Minimum capital requirement ("MCR") this is the lowest solvency control level. It acts as an ultimate safety net for policyholders. If the insurer breaches the MCR, the supervisor would invoke its most stringent powers, if the insurer has not taken timely corrective action to strengthen their capital resources. The MCR sets a minimum level below which no insurer is seen as able to operate effectively. The supervisor's actions increase in intensity as the insurer's capital position approaches the MCR.
- 95. These two quantities are illustrated in the diagram below.



- 96. ICP 17.4.7 allows extra control levels in between the PCR and the MCR, which could correspond to supervisory intervention or actions the supervisor requires the insurer to take. The guidance is flexible about whether or not these extra control levels need to be formally established with explicit intervention actions linked to particular control levels, or less formally with a range of potential intervention actions available to the supervisor.
- 97. In either case, ICP 17 requires possible triggers and interventions at each control level to be disclosed appropriately. The guidance also suggests the criteria for setting up the solvency control levels should be simple and readily explainable when seeking court enforcement of supervisory action.

4.1.1 Current regulatory environment

- 98. Insurance solvency standards are issued under Section 55 of IPSA. The current solvency standards specify the calculations for the:
 - Minimum solvency capital ("MSC") the minimum amount of capital to be held for solvency purposes. It
 is intended to ensure that the company can meet its obligations to policyholders in a range of adverse
 scenarios. MSC is calculated based on stressed assumptions intended to achieve a 99.5% probability of
 sufficiency (1-in-200) over a period of one year; and
 - Actual solvency capital ("ASC") the amount of capital that can be considered as supporting the MSC. The ASC is calculated as the company's net assets less deductions.
- 99. The following measures are often used as an indicator of the size of the buffer held by the insurer over and above the capital required by the solvency standards:
 - Solvency margin = ASC MSC;
 - Solvency ratio = ASC/MSC
- 100. When the ASC and MSC are equal, the solvency margin is zero and the solvency ratio is 100%.
- 101. Many New Zealand insurers currently implement a capital management plan, which may include a plan for addressing a fall in the solvency ratio. These plans, however, are not consistent and comparable across all insurers, and may not be tied to the risk management framework.

4.1.2 IPSA

- 102. Section 21(2)(b) and (c) enable us to set licence conditions that require insurers to maintain a solvency margin (including solvency margins in respect of statutory funds) in accordance with an applicable solvency standard. Standard conditions of licence set the solvency margin at 100%.
- 103. We may impose a non-standard licence condition that requires an insurer (or an insurer's statutory fund) to maintain a solvency ratio higher than 100%. An increase in solvency may also be imposed by a direction given under Section 143, provided that the grounds for imposing a direction are set out.
- 104. Section 24 of IPSA requires the insurer to let us know if a breach of the solvency margin (that is, a solvency ratio below that set by licence conditions) is likely to occur in the next 3 years.
- 105. Reasonable cause to suspect failure (or likely failure) to maintain the solvency margin is one of the criteria for using distress management powers under IPSA; for example, investigations under Section 130, the requirement for a recovery plan under Section 138, and directions including to cease to carry on business in accordance with the direction under Sections 143 and 145. In addition, failing to maintain a solvency margin is a ground for us to apply to liquidate the insurer under Section 151. If an insurer is not failing (or is unlikely to fail) to maintain its required solvency margin, then these escalations can only be exercised if other grounds exist, e.g. failure to conduct business in a prudent manner or failing to comply with another condition of licence. IPSA currently does not mandate any particular supervisory action to be taken for insurers failing to maintain solvency it is fully discretionary.
- 106. Issues relating to capital adequacy can only be addressed through the exercise of the most intrusive IPSA powers once the insurer's solvency ratio has fallen (or is at risk of falling) below that set by licence condition (usually set as a solvency margin of 100%). In some circumstances, formal regulatory action may be taken too late, reducing the chances of recovery.
- 107. As discussed in an earlier section, we have started thinking about how the solvency standards should change in response to IFRS 17, which will likely result in new definitions for MSC and ASC. However, throughout this section we use the current definitions of MSC and ASC in order to minimise confusion.

4.1.3 What's the problem?

108. As part of the 2016 FSAP, which assessed New Zealand's compliance with the ICPs, the IMF stated that:

The solvency standards specify only one solvency control level: the Solvency Margin. The Solvency Margin is a minimum capital requirement as envisaged in ICP 17.4, in the sense that RBNZ's belief on reasonable grounds that "the insurer has failed, is failing, or is likely to fail to maintain a solvency margin" is a ground for requesting a recovery plan [IPSA section 138(1)], or ground for issuing directions [IPSA section 143(1)(a)]. "The insurer is failing to maintain a solvency margin" is a ground for application to the High Court for liquidation [IPSA section 151(2)].

On the other hand, the Solvency Margin has the characteristics of a prescribed capital requirement as envisaged in ICP 17.4, in the sense that RBNZ may allow an insurer not to maintain the Solvency Margin (albeit for a short period of time), as RBNZ recognises that the Solvency Margin is determined on a conservative basis and that the insurer might still be viable when it fails to maintain the solvency margin.

The RBNZ has not yet developed a formal process to determine the appropriate response, if any, relative to the level of Solvency Margin.

- 109. To increase alignment with the ICPs, the FSAP recommended the following improvements to the solvency framework:
 - Having two solvency control levels as specified in ICP 17.3 and 17.4 would enable less intrusive early intervention before the insurer's condition deteriorates to a critical level.
 - Developing internal guidance for what supervisory actions would be taken at each solvency level, with the strongest actions reserved for when the insurer fails to maintain solvency at the lower control level.
- 110. Trowbridge and Scholtens, in their <u>review</u> of the CBL liquidation process, echoed these recommendations. In particular, the binary approach to solvency (with over 100% - or analternative figure set by licence conditions - solvency ratio being satisfactory, and unsatisfactory otherwise) was considered too rigid and unhelpful for capital management. Trowbridge and Scholtens argued that "a graduated and more flexible approach" should be adopted, citing the following examples:
 - The Internal Capital Adequacy Assessment Process ("ICAAP") framework that applies to APRAregulated entities. This is an internal company document prepared by the insurer that places responsibility for capital management on the insurer's board (subject to approval by APRA). The ICAAP comprises, amongst other things, a triggered capital action plan to reduce the likelihood of breaching the minimum capital requirement. (The APRA framework is discussed in further detail in Appendix 1. The European Central Bank also implements an ICAAP similar to Australia's framework.)
 - The Escalating Supervisory Response ("ESR") framework for licensed banks in New Zealand (still under development). Trowbridge and Scholtens noted that this is an opportunity to increase alignment between industries regulated by the Reserve Bank. Unlike the ICAAP, which is an internal insurer framework designed to ensure that the minimum capital requirement is not breached, the ESR is a framework maintained by the Reserve Bank to deal with instances where capital falls below the regulatory minimum.

4.1.4 Purpose of framework

111. What purpose should a ladder of intervention framework serve? Does it serve to encourage insurers to maintain adequate buffers above the PCR to minimise the likelihood of a breach, or to provide clarity to supervisors when dealing with a breach of the PCR?

- 112. Adopting an ICAAP-type framework places the onus on the insurer to maintain capital buffers above the MSC. On the other hand, a pure ladders of intervention framework provides a base under which we may operate once capital falls below the MSC.
- 113. The insurer's board should have ultimate responsibility for managing the business and its capital. However, regulatory capital requirements support good capital management practices by insurers and help align incentives for firms and policyholders. A possible way to balance competing objectives would be to formalise the capital management framework under something like an ICAAP framework (dealing with buffers above the top solvency control level). This could complement a ladder of intervention that deals with supervisory action for when capital falls below the top solvency control level.
- 114. The following diagram shows this framework, alongside the banking ESR and current insurance framework for comparison. Note that the diagram is not to scale. Although we have placed the solvency margin under the current framework in between the top and bottom rungs under the new framework, this is for illustrative purposes only. We have not yet decided where the rungs should be placed.



- 115. As shown above, the current solvency framework is binary and anchored on the solvency margin. Above the solvency margin specified in the licence condition, normal risk-based supervision applies. As soon as the solvency margin falls below the specified minimum, IPSA releases crisis management powers.
- 116. The recommended ladder of intervention framework has two (or more) solvency control levels. The top solvency control level acts as a boundary between normal risk-based supervision (possibly alongside an ICAAP-type framework) and increasing supervisory intervention. As solvency levels fall below the top rung and approach the lower rung, supervisory intervention and powers increase. The bottom rung acts as a boundary between increasing supervisory oversight and crisis management.
- 117. In this document, we would like to explore possible bases on which the risk posed by an insurer could be measured to set appropriate control levels. In particular, on what basis might we decide that an insurer's operations are no longer viable, triggering a need for crisis management or liquidation? Can this be represented by balance sheet insolvency (i.e. where net assets fall below zero), or should it be set at a point above balance sheet insolvency?
- 118. And, for the top rung of the ladder, what level and form of increased risk or vulnerability should imply the need to begin subjecting an insurer to enhanced supervisory oversight? What metrics might be used to specify these points and what measures would be best to capture the deterioration of solvency levels between the control levels?
- 119. The New Zealand banking framework uses the capital ratio (capital as a percentage of risk-weighted assets) as a measure of the bank's viability. Does it make sense to use the solvency ratio in the same way, or might other measures be better for conceptualising insurers' risk or of explaining risk levels to the public?

120. To be clear, at this stage we are not looking to determine the points at which the control levels should be placed, as this would require the most appropriate way to measure resilience to be established. However, we invite comments from submitters on what the appropriate points might be.

4.2 **Options for operating the ladder**

- 121. While the ICPs provide a broad framework for implementing a ladder of intervention, they recognise jurisdictional differences with regard to the overall level of capitalisation, supervisory risk appetite, nature of the market and the regulatory landscape. The ICPs therefore do not provide any detailed guidance on how the framework is to be established.
- 122. As mentioned earlier, the focus at this stage is on the quantitative capital-based aspect of a ladder framework (i.e. determining each solvency control level and how to assess the insurer's performance against these solvency control levels). It is not on where to place those solvency control levels or which specific supervisory interventions will apply at each solvency control level. Specific supervisory intervention proposals will be developed at a later stage.
- 123. We include a high-level international comparison in Appendix 1. While international frameworks provide a good reference point, it is important that the framework is suitable for the New Zealand environment.
- 124. The framework's quantitative aspect can be separated into two components: firstly, how the solvency control levels should be calculated, and secondly, how the insurer's capital position will be assessed against the solvency control levels.

4.2.1 Solvency control levels

125. Measures that could be used to determine the solvency control levels (i.e. the rungs of the ladder) include:

Value-at-Risk (VaR)

For a given confidence level p and time horizon t, there is a probability of (1-p) that losses will exceed the VaR. For instance, the top solvency control level could be set at a 99.5% (say) confidence level, and the bottom one at an 85% confidence level. Alternatively, the bottom solvency control level could be set as a simple percentage (say 90%) of the top solvency control level. The VaR method yields a dollar amount.

Pros	•	Least implementation cost as it is the method used in the current solvency standards. Widely used internationally (LAGIC, Solvency II).
Cons	•	Ignores size of loss in the tails (for probabilities smaller than 1- <i>p</i>). These losses can be significant where the loss distribution is heavily skewed.
	•	Added cost and complexity for both industry and/or the Reserve Bank as accurate calculation (or calibration of parameters) will likely require the use of stochastic or other advanced modelling.

Scenario-based

Under this approach, the solvency control levels would be determined using a number of prescribed scenarios representing, for example, severe, moderate and mild stresses to insurers. The scenarios could be based on real-life historical events, such as the Christchurch earthquakes, COVID-19 pandemic and the GFC. This approach would also yield a dollar amount, representing the amount of capital required to be sufficient to withstand the stresses resulting from each scenario.

Pros • May be more easily understood from a policyholder's perspective.

- **Cons** Severity of scenarios may be subjective and may not allow for full range of extreme scenarios, especially if based on historical events.
 - May not be internationally recognised.
 - Does not give an indication of probability of failing to meet claims.

NB: If it were decided that this method was not suitable as a basis for solvency control levels, it might still have merit as a supplementary approach, for example in stress testing of insurers' resilience and for establishing tail correlation factors.

126. To fully implement a ladder of intervention framework with multiple solvency control levels would require a change to IPSA. The results of this consultation will feed into the IPSA review; once a suitable framework has been developed, any changes required to IPSA will be identified and consulted on. The solvency buffers module of the IPSA Review is scheduled for the first half of 2021.²⁰

Questions for consultation:

- Y. Should we implement a ladder of intervention approach to solvency? Please give your reasons.
- Z. At what point should the insurer's operations be considered to be no longer be viable?
- AA. Conversely, what point in an insurer's solvency level triggers the need to start increasing the intensity of supervisory intervention from normal risk-based supervision?
- BB. Should we adopt an ICAAP/ORSA-type approach alongside the solvency requirements? If so, are either of these frameworks a good starting point for New Zealand? Please provide reasons supporting your statements.
- 4.2.2 Measures of solvency position
- 127. Measures that could be used to assess the insurer's performance against the solvency control levels include (i.e. where the insurer sits on the ladder):

Solvency ratio Use the solvency ratio as currently defined, i.e. the actual capital over required capital. Note that "capital" refers

to the excess of assets over liabilities.		
Pros	•	Least cost and complexity as no change from current method. Broadly comparable to other jurisdictions as most report some form of solvency ratio.
Cons	•	Solvency ratio may not be the best measure by which to assess solvency. For example, the presence of a large negative policy liability on life insurers' balance sheets distorts the comparison between life and general insurers.
	•	Have to consider impacts of how the solvency ratio may change from current after transition to IFRS 17.
	•	Only an indirect indication of how likely the company is to not be able to meet its obligations to policyholders.

²⁰ https://www.rbnz.govt.nz/-/media/ReserveBank/Files/Publications/Policy-development/Insurers/ISS-review/IPSA-Review-Relaunch-October-2020.pdf?la=en&revision=795010e2-8f8a-4d97-a3de-5eb000632aa4
Assets over stressed liabilities

This measure shows the amount of assets the company has to cover the stressed liabilities. The stressed liabilities may include asset-side stresses for completeness (as assets and liabilities need to be considered together).

Pros	•	A more direct calculation approach, and therefore might be more easily understood from a communications or policyholder's perspective. May provide a better comparison of solvency positions across industry, as it is less susceptible to distortions due to peculiarities in insurance accounting (e.g. negative policy liabilities).
Cons	•	May not be comparable to other jurisdictions. Have to consider communications impacts transition to IFRS 17 (need to isolate what change is due to IFRS 17 and which change is due to a measurement approach change).

• Only an indirect indication of how likely the company is to not be able to meet its obligations.

Probability of failure

The probability that an insurer will not be able to fully meet its obligations to policyholders over a certain time period.

Pros	•	Policyholders may be more interested in knowing how likely the insurer is to not be able to meet its obligations to policyholders. May be a more natural way of describing loss.
Cons	•	May involve complex modelling (and potentially subjective assumptions) on the part of the insurers to translate the amount of capital held by the insurer to a probability measure.
	•	As this is a technical concept, there is a danger that it may be misinterpreted by policyholders.

128. Some calculation methods lend themselves more naturally to particular assessment measures, as shown in the following matrix.

Measure	VaR	Scenarios
Solvency ratio	\checkmark	\checkmark
Assets over stressed liabilities	\checkmark	\checkmark
Probability of failure	\checkmark	X

129. We currently use the VaR method to specify the MSC and the solvency ratio to assess the insurer's position relative to the MSC.

Questions for consultation:

CC. Are any of the above measures more or less appropriate to calculate and assess an insurer's solvency position, from the point of view of implementing an effective ladder of intervention framework? Please give your reasons. If not, what measures do you consider would be more appropriate for this purpose?

4.3 Other considerations

- 130. The main focus of the current consultation is on the conceptual lens we should be using for thinking about where the solvency control levels should be placed, and the most sensible way to measure and communicate levels of solvency. However, once we have reached a decision on these fundamental issues, two further concerns will need to feed into setting appropriate control levels and corresponding supervisory responses.
- 131. The framework should be practical, easily understood, and not impose undue burden on the industry or on the Reserve Bank, but there is likely to be a trade-off between flexibility and transparency. While on one hand a more formal framework might provide clarity to both the industry and ouselves (as well as being a sound basis for any decision-making if legal action is required), supervisors may need some degree of discretion to allow for a more flexible and robust framework. For example, an insurer breaching the top rung of the ladder could give supervisors the right, but not the obligation, to use certain tools, while breaches of lower rungs could *require* certain supervisory actions to be taken.
- 132. Where we ultimately place the solvency control levels (including how far 'above' or 'below' the current MSC the levels are placed) and the supervisory actions that correspond to them, should reflect a well-articulated understanding of the Reserve Bank's risk appetite in relation to the insurance sector.
- 133. Section 4 of IPSA states that the Act is not intended to lead to a zero-failure regime. This recognises that there may be trade-offs between soundness on the one hand and efficiency or competition on the other.²¹ Our risk appetite is risk-based and thus fully aligned with IPSA. This means that the more important for the sector an insurer is, the less appetite there is for risk. The intensity of supervisory engagement may therefore differ depending on entities' sectoral importance. At the same time, we need consistency and a simple regulatory framework, so major differences in rules are unlikely.
- 134. We also need to balance soundness and efficiency at a macro level. New Zealand is a comparatively small market and is exposed to natural events such as earthquakes. This means that fostering competition and the availability and coverage of insurance are important considerations. At the same time, it also means that there is a higher potential for concentration of risk and that the sector may find it more difficult to absorb the failure of big players. Our mandate to promote confidence in the insurance sector is also relevant in this context. Large scale insurer failures after an event would undermine confidence and could lead to longer-term underinsurance and shrinkage of the sector. Weighing up these different considerations leads us to the initial conclusion that our regulatory settings should be more conservative than in peer jurisdictions, without undermining the efficiency aspects of our mandate. We acknowledge that there are significant difficulties when it comes to making international comparisons.

Questions for consultation:

- DD. What approach would strike the right balance between clarity and discretion when setting out supervisory responses at different levels of the ladder of intervention?
- EE. What should our risk appetite be in relation to insurer failure?

²¹ Note that soundness and efficiency can also be reinforcing and short term trade-offs can become long term synergies if the time frame is extended.

5. Solvency calculations

5.1 Deductions vs Charges

- 135. Our current standards require the full deduction of certain assets in determining Actual Solvency Capital. These include items such as intangible assets and deferred tax assets that may not be realisable, and potentially also accounting entries that mask the economic reality of the insurer's situation.
- 136. This approach is in line with a "wind-up" valuation of the insurer, and may, therefore, be appropriate for determining an insurer's minimum solvency requirement (i.e. the bottom rung of a ladder of intervention). A wind-up valuation may not, however, be appropriate for determining higher rungs of the ladder, where it could be assumed that the insurer is still a going concern.
- 137. To the extent that these items change in value under the operation of solvency stresses, they could also be addressed through the Resilience Risk Capital Charge. This would permit a more nuanced approach, allowing some value to be retained where appropriate.
- 138. As shown in the diagrams below, the solvency margin is unaffected by replacing deductions with capital charges (contributing to the MSC) of the same amount. The solvency ratio actual solvency capital divided by minimum solvency capital decreases, however, as the denominator and numerator increase by the same amount.



139. The Solvency Margin may change, however, if the capital charge is not equal to the deduction.

Questions for consultation:

- FF. Would you be comfortable with handling some deductions from capital through the Resilience Risk Capital Charge? Why or why not?
- GG. Do you believe that some value should be allowed for these deductible items at higher levels on the ladder of intervention? Is it appropriate to assume a 'going-concern' valuation at these levels?

5.2 Supervisory adjustments

- 140. There are a number of situations where it may be appropriate for us to have the power to adjust insurers' solvency calculations. These include where:
 - A material item on an insurer's balance sheet is held at a value that does not reflect its true economic value.
 - An insurer or their appointed actuary has used judgement regarding solvency stresses and discretions. This has the effect that the Minimum Solvency Capital (MSC) no longer aligns with the target solvency criterion (i.e the 99.5% VaR objective under current standards).
 - The insurer is subject to material risks not (fully) assumed by the solvency standards, once again with the result that the MSC is misaligned with the solvency criterion.

- 141. Since the passage of IPSA, the main tool used to address such matters has been the power to impose a minimum solvency margin/ratio through conditions of licence. This approach has some weaknesses, however, as follows:
 - Solvency ratios and margins published by insurers do not incorporate these additional licence condition requirements, distorting the picture presented to policyholders and the public.
 - While IPSA Section 21(4) allows licence conditions to be fixed in either dollar or percentage terms, or in *any other way*, in practice it has been difficult to make conditions responsive to changes in business volumes or insurer risk profiles.
- 142. We propose introducing "supervisory adjustments" similar to the LAGIC framework as an integral part of the process of determining solvency capital requirements.²² This supervisory adjustment would then form part of the insurer's minimum solvency capital, and be captured in any reporting and disclosure requirements.



- 143. Depending on circumstances, such supervisory adjustments could take the form of, for example:
 - fixed dollar amounts
 - ratios to balance sheet aggregates (e.g. a percentage of premiums or claims)
 - · instructions to use certain methods or assumptions in the valuation of balance sheet items
- 144. The power to impose insurer-specific minimum solvency margins and ratios would remain (but would likely be used more sparingly).

Questions for consultation:

HH. Is it appropriate for us to adjust insurer solvency calculations?

- II. Does the list in paragraph 140 above cover all circumstances where solvency calculations should be adjusted?
- JJ. Do you support introducing supervisory adjustments as an integral part of the determination of capital requirements?
- KK. Are there other forms (other than fixed amounts, ratios and valuation instructions) that the supervisory adjustments could take?

²² As this is a significant supervisory power, this may require changes to IPSA.

5.3 Hierarchy of risks and diversification

145. Solvency II takes a highly systematic approach to analysing and measuring risk. First, a near-exhaustive list of individual risks was developed.²³ Next, these individual risks were allocated to major risk categories - market, default, operations and insurance – which are similar to the Basel categories. Category charges at the category level are determined by assuming certain correlations among the individual risks and combining by formula of the form

Compound Capital Charge = $\sqrt{\sum_{ij} Correlation_{ij} \times Capital Charge_i \times Capital Charge_j}$

146. The Basic Solvency Capital Requirement ("BSCR") is determined similarly from the capital charges for the risk categories. The final solvency capital requirement adds an operational risk charge and supervisory adjustments.



Source: Solvency II technical specifications

- 147. This approach has the obvious advantage of allowing a broad range of material risks to be identified and analysed in a logical framework that recognises relationships between risks.²⁴ It also allows for somewhat more granular risk information to be collected from Insurers.
- 148. A further advantage of this approach is that it provides a framework in which an insurer's degree of risk diversification can be assessed and then rewarded or penalised as appropriate. In simple terms, an insurer subject to a wide variety of uncorrelated risks should have a lower capital requirement than an insurer subject to a single risk of similar intensity. This is because it is highly unlikely that multiple risks would crystallise at the same time.
- 149. New Zealand solvency standards do not allow for diversification, and accordingly parameters have been modified from the pre-diversification values used in overseas regimes. Well-diversified insurers are subject to the same treatment as poorly diversified providers.

²³ Many of these risks are also hypothesised in New Zealand's existing solvency standards, however some (spread, revision, health lapse, expenses) are not. Note also that some of these risks are themselves compound in nature – for example life lapse risk countenances both an immediate mass lapse event and an ongoing permanent change in lapse rates.

²⁴ For example, the Solvency II correlation factor between mortality risk and longevity risk is -0.25, recognising that if mortality rises, longevity tends to fall (and vice-versa).

150. We acknowledge the major criticisms of the use of correlation matrices, namely that they are blunt instruments and that they model 'peace-time' relationships rather than conditions that prevail in times of stress. We believe that these issues can be mitigated to some extent by carefully examining the relationships during historic periods of stress. We are not proposing, at this time, the use of more complex approaches to modelling risk relationships.

Questions for consultation:

- LL. Should New Zealand adopt a more structured risk hierarchy? Why or why not?
- MM. Is it necessary to introduce risk charges for risks currently not hypothesised in solvency standards, for example operational risk? Why or why not?
- NN. Should solvency standards allow for a diversification benefit of some form? Is the Solvency II approach to relating risks appropriate for New Zealand conditions?

5.4 Life insurance risk capital charge restructure

- 151. The life insurance risk capital charge ("Life IRCC") is different to all the other risk charges in the current solvency standards. It represents a stressed form of the underlying best estimate liability²⁵ rather than a stress *on* the best estimate liability. This Life IRCC is then combined with other capital charges to derive the solvency requirement (which is also a stressed liability in form). The minimum solvency capital ("MSC") must be a capital measure, however, as it is compared with actual solvency capital ("ASC") to determine the solvency margin ("SM"). To derive the MSC from the solvency requirement, we need to, as a final step, deduct the policy liability.²⁶
- 152. This treatment can cause confusion, as internationally the term "capital charge" is used to denote an amount of capital that needs to be set aside to support a particular risk (*not* any form of liability). We propose that New Zealand solvency standards reflect this international usage and redefine the Life IRCC as a true capital charge. This would be effected by deducting the policy liability from the stressed liability *within the capital charge module*, rather than outside it as is currently the case.²⁷
- 153. Note that we are only addressing the structural issue with the Life IRCC in the current document. Inherent issues will be addressed in the "liability charges" consultation cycle, scheduled for the second half of 2022.

Questions for consultation:

OO. Should the deduction for policy and other liabilities be moved inside the Life IRCC?

5.5 Grouping of policies

5.5.1 Background

154. Pooling of risks is a core tenet of insurance, and insurers routinely categorise individual risks (policies) into groups for various purposes, including pricing and analysing experience (claims, persistency, etc). The choice of size and categorisation of groups may vary according to the group's purpose, as well as the amount of reliable data available in each group.

²⁵ The present value of future policy cash-flows on best-estimate assumptions.

²⁶ Note that other (accounting) liabilities are carried through the calculation, being added into the Life IRCC and then deducted out again as a final step. For simplicity these have been ignored in the text.

²⁷ Note that the Variable Annuity Capital Charge and the Solvency Liability Resilience Impact are both linked to the Life IRCC, so may need to be adjusted accordingly.

155. Smaller, more granular groups allow greater visibility of the performance and profitability of particular business classes. Larger groups, on the other hand, allow for more offsetting and cross-subsidisation between products. This may obscure the characteristics of certain classes of business within the larger group.

5.5.2 NZ IFRS 4 vs IFRS 17

- 156. Under NZ IFRS 4, life insurance policies are organised into related product groups ("RPGs"). These are policies that "have substantially the same contractual terms and are priced on the basis of substantially the same assumptions."
- 157. The current life insurance solvency standards rely on NZ IFRS 4 RPGs. For example, in the Life Insurance Risk Charge, solvency liabilities for an RPG are subject to a floor of the total CTV for the RPG. Note, however that the solvency liability for an individual policy within the group can be less than its CTV, provided that the shortfall can be offset by other policies.
- 158. Under IFRS 17, however, the existing definition of RPGs will no longer exist. Instead, they will be grouped into a hierarchy as follows. At the top level will be "portfolios", which are "contracts subject to similar risks and managed together". Portfolios need to be split into "cohorts" comprising business written in calendar time periods not exceeding one year. Finally, each cohort is split into three "groups" depending on expected profitability solidly profitable, onerous and marginal.

				Insurer				
			Portfolio #1	<u> </u>	Portfolio #2			
	Year 1	Year 2	Year 3			Year 1	Year 2	Year 3
Profitable	Group 1P	Group 2P	Group 3P		Profitable	Group 1P	Group 2P	Group 3P
Onerous	Group 1O	Group 2O	Group 3O		Onerous	Group 1O	Group 2O	Group 3O
Marginal	Group 1M	Group 2M	Group 3M		Marginal	Group 1M	Group 2M	Group 3M

159. The non-life standard does not rely on this same definition of RPGs. Instead, it applies insurance risk charge stresses to "classes of business" (domestic property, domestic motor, etc.), and is therefore likely to be less affected than the life standard. However, there may be room for more clarity and standardisation in the definition of "classes of business". Additionally, this could be seen as an opportunity to reconsider whether this level of aggregation for non-life business remains suitable, and whether consistency with the level of aggregation for life business is needed.

5.5.3 Options

- 160. The question therefore arises: how should policies be grouped for calculating solvency after transition to IFRS 17? IFRS 17 portfolios may be larger than IFRS 4 RPGs given the definitions referenced above, while cohorts and groups are likely to be more granular.
- 161. We have set out the range of possible options to address the grouping issue in the table below. In choosing an appropriate option, keep in mind that the focus of IFRS 17 is on accurately determinating and reporting profit over time. This focus may not be suitable for regulatory purposes.²⁸

²⁸ IFRS 17 BC.15, BC.119

Grouping option	Possible theoretical basis	Impact on capital requirement	Advantages	Disadvantages
Insurer	Policyholder security is provided by the insurer.	Lowest	Ease of administration	 Lack of visibility regarding performance of individual products/classes
				 Potentially unequitable if participating products subsidise non- participating products
Statutory fund	Policyholder security is provided by the fund.	Lower	 Reflects that a purpose of statutory funds is for policyholder protection Consistent with LAGIC 	 Leads to potential inconsistencies between life and non-life as the latter does not have statutory funds
IFRS 17 portfolio	"Similar risks and managed together"	Slightly lower?	 Can leverage off IFRS 17 implementation leading to lower costs for industry Easily reconciled to accounts Easily understood internationally 	 Portfolios may not be standardised across insurers
Regulatory groupings	Groupings that are appropriate for regulatory purposes, defined by the Reserve Bank – minimum saleable block of business? Product classes (e.g. Lump Sums, Income Protection, Domestic Motor, etc.)?	Slightly higher?	 Flexibility to define a grouping that is more appropriate for regulatory purposes 	 Potentially higher implementation costs if insurers have to maintain multiple definitions of groupings (for accounting and regulatory purposes) Difficult to reconcile to accounts
IFRS 17 group	Alignment with profitability inspection level in accounting standards	Higher?	Can leverage off IFRS 17 implementation leading to lower implementation costs for industry	 Definitions that are too granular may not recognise pooling of risks Increased operational complexity in maintaining too many groups
Individual policy	No policy should be an asset.	Highest	Highest level of protection for policyholders	Does not recognise pooling of risks

162. Our initial preferred option is to adopt regulatory groupings, as we consider that this is likely to result in greater consistency and comparability across the industry relative to the other methods. It would also allow some degree of cross-subsidy between policies.

Questions for consultation:

- PP. Are any of the above grouping options appropriate for solvency purposes? Please provide your reasons.
- QQ. Are there any other grouping approaches that you consider would be appropriate for solvency purposes? Please provide your reasons.
- RR. What are your views on our preferred option of specifying regulatory groupings for solvency purposes? What basis do you think should be used to form the regulatory groupings? Please provide your reasons.

Have your say

- 1. Stakeholders are welcome throughout the Review to provide comment and information to us. At this time we are particularly seeking commentary on the questions set out above, however we would welcome any general comments as well.
- 2. Use this email <u>insurancesolvency@rbnz.govt.nz</u> to provide comments. Please clearly indicate which question or section your comments relate to.
- 3. Comments or submissions should be received by 18 February 2021. Submissions received after this date will not be considered.
- 4. As noted earlier in this paper, it is our practice to publish submissions received unless specifically requested not to. We may also publish an anonymised summary of submission received.

List of consultation questions

- A. Would a purpose statement be a useful addition to the solvency standards? Why or why not?
- B. Please comment on the utility of the purpose statement ("The purpose of capital is to ensure that, in adversity, an insurer's obligations to policy-holders will continue to be met as they fall due.") and suggest improvements, if any.
- C. How likely should the fulfilment of obligations by an insurer be (recognising that certainty is an impossibility, and that there is a trade-off with efficiency and competition)?
- D. Should the solvency risks be assumed to crystallise immediately, in the short-term (say one year) or over the long-term?
- E. Should a "total balance sheet approach" be adopted for solvency calculations?
- F. Do you think there are insurers that are "sectorally-important"? If so, what would be the advantages and disadvantages of imposing higher capital requirements on them, relative to those that are considered not sectorally-important? Please provide your reasons.
- G. Please comment on how effectively existing solvency standards address particular sectors and subsectors of the industry.
- H. Should health insurance have its own specific solvency standard? Please provide your reasoning.
- I. Please discuss your preferences with respect to how the standards should apply to industry sectors, with reference to the following options:

Option	Description	Advantages	Disadvantages
1	Sector-differentiated status quo – separate Life and Non-Life Standards	Least cost for industry as would not require the industry to change its calculation methodologies.	Potential inconsistencies and more complex upgrade path.
2	Single solvency framework covering all sectors and subsectors	Streamlined approach and less potential for inconsistency.	Higher cost to industry as industry would be required to make significant changes to their calculation methodologies. Risk that sector-specific risks may not be accurately captured.
3	Rationalisation – folding the variable annuity standard into the life standard, and the three non-life standards into a single document	Would address some of the issues listed above relating to inconsistency, while still explicitly allowing for sector- specific differences.	Potentially minor costs to affected insurers.

J. Please comment on how effectively existing solvency standards address statutory and other funds.

K. Should solvency standards applied to statutory funds apply a floor to assets based on the provisions of Sections 82-119? L. Please discuss your preferences with respect to how the standards should apply to statutory and other funds, with reference to the following options:

Option	Description	Advantages	Disadvantages
1	Status quo – life insurers have solvency requirements for statutory funds and the insurer as a whole; non-life insurers have requirements only at the insurer level.	No disruption to insurers.	Minimum assets determined at the current level may not be sufficient to resolve all blocks of business for an insurer in distress.
2	All business allocated to 'insurance funds'. ²⁹ Solvency requirements are only applied at the insurer level, although these requirements will be a function of fund solvency.	Facilitates resolution of all blocks of business.	May result in increased costs (administrative and capital) for insurers.

- M. In your view, is the current treatment of insurance and non-insurance subsidiaries in the solvency standards appropriate? Please provide your reasons.
- N. If your answer to the previous question was "No", what do you feel would be a better treatment of insurance and non-insurance subsidiaries?
- O. In the context of solvency requirements, which of the following options do you consider to be the most appropriate for New Zealand? Please give your reasons.

Option	Name	Description
1	Status Quo	Continue to require NZ IFRS 4 for solvency purposes
2	GAAP	Continue to use the GAAP balance sheet after transition to IFRS 17, and make no changes to the solvency standard.
3	GAAP with adjustments	Use GAAP where it makes sense, but make adjustments for certain areas/parameters. There are varying degrees of prescription involved with this method. Sub-options: (a) specify insurance liability valuation parameters, (b) specify insurance liability valuation method, and (c) use a non-IFRS 17 insurance valuation method.
4	Full regulatory balance sheet	Ignore GAAP entirely and specify a separate set of regulatory reporting requirements.

- P. How do insurers currently treat non-technical insurance assets and liabilities on the balance sheet? Are all assets currently designated as backing insurance liabilities, and hence valued using the fair value approach? Are there any items (other than technical provisions) on the balance sheet that insurers are not currently measured using fair value?
- Q. How, if at all, is the treatment in (P) likely to change after transition to IFRS 17 (and IFRS 9)?

²⁹ Insurance funds would include statutory funds and other pools of assets deemed to be providing security for specific types of policy liability.

- R. Is fair value a reasonable approach to value non-technical assets and liabilities? Would an adjustment to bring all assets and liabilities on the balance sheet to fair value for solvency purposes be appropriate?
- S. Is it necessary to have visibility of insurance receivables, and hence the associated credit risk, from a solvency perspective? If not, how do we ensure that any material credit risk is properly reflected in the solvency standards?
- T. How do insurers currently measure insurance receivables and payables (premium and reinsurance recovery receivables, claims payable)?
- U. How are insurers looking at implementing the changes relating to insurance receivables and payables resulting from IFRS 17 from a systems perspective? Are major system changes to collate the receivables/payables system with the valuation system being considered, or will separate systems be maintained, with a high level adjustment being applied to incorporate the receivables/payables into the measurement of insurance contracts?
- V. If the measurement of insurance receivables under IFRS 4 currently includes an allowance for impairment, how will insurers change the basis to determine the impairment related to insurance receivables after transition to IFRS 17?
- W. How are the tax items on the balance sheet likely to be impacted by IFRS 17 (and IFRS 9)?
- X. Will there be any flow on impacts of tax impacts on other insurance and non-insurance items on the balance sheet?
- Y. Should we implement a ladder of intervention approach to solvency? Please give your reasons.
- Z. At what point should the insurer's operations be considered to no longer be viable?
- AA. Conversely, what point in an insurer's solvency level triggers the need to start increasing the intensity of supervisory intervention from BAU supervision?
- BB. Should we adopt an ICAAP/ORSA-type approach alongside the solvency requirements? If so, are either of these frameworks a good starting point for New Zealand? Please provide reasons supporting your statements.
- CC. Are any of the above measures (solvency ratio, assets/stressed liabilities, probability of failure) more or less appropriate to calculate and assess an insurer's solvency position, from the point of view of implementing an effective ladder of intervention framework? Please give your reasons. If not, what measures do you consider would be more appropriate for this purpose?
- DD. What approach would strike the right balance between clarity and discretion when setting out supervisory responses at different levels of the ladder of intervention?
- EE. What should our risk appetite be in relation to insurer failure?
- FF. Would you be comfortable with handling some deductions from capital through the Resilience Risk Capital Charge? Why or why not?
- GG. Do you believe that some value should be allowed for certain deductible items at higher levels on the ladder of intervention? Is it appropriate to assume a 'going-concern' valuation at these levels?
- HH. Is it appropriate for us to adjust insurer solvency calculations?
- II. Does the list in paragraph 140 cover all circumstances where solvency calculations should be adjusted?
- JJ. Do you support introducing supervisory adjustments as an integral part of the determination of capital requirements?
- KK. Are there other forms (other than fixed amounts, ratios and valuation instructions) that the supervisory adjustments could take?

- LL. Should New Zealand adopt a more structured risk hierarchy? Why or why not?
- MM. Is it necessary to introduce risk charges for risks currently not hypothesised in solvency standards, for example operational risk? Why or why not?
- NN. Should solvency standards allow for a diversification benefit of some form? Is the Solvency II approach to relating risks appropriate for New Zealand conditions?
- OO. Should the deduction for policy and other liabilities be moved inside the Life IRCC?
- PP. Are any of the following grouping options (Insurer, statutory fund, IFRS 17 portfolio, regulatory groupings, IFRS 17 groups, individual policy) appropriate for solvency purposes? Please provide your reasons.
- QQ. Are there any other grouping approaches that you consider would be appropriate for solvency purposes? Please provide your reasons.
- RR. What are your views on our preferred option of specifying regulatory groupings for solvency purposes? What basis do you think should be used to form the regulatory groupings? Please provide your reasons.

Appendix 1 – International comparisons

	New Zealand	Australia – LAGIC	Europe – Solvency II	IAIS – ICS
Sectors				·
Differentiation by sector?	 Yes. There are separate standards for life and non-life business, even though IPSA allows composite insurers. Whilst the standards are broadly consistent, they differ primarily with respect to treatment of insurance risk. Some identical non-insurance risks faced by each sector are treated a little differently. 	 Yes. There are separate, but consistent, standards for life and general insurers. Australian law does not permit composite insurers. Life, General and Health business is regulated under separate acts, and composite insurers are not allowed. 	 No. Solvency II is a single framework applicable to all insurers. Insurance risk is classified as life or non-life and treated differentially. Non-insurance risks are treated uniformly for all insurers. NB: Composite insurers are not allowed, although accident and health business can be written by both life and non-life insurers. 	 Entities are split into their insurance and non-insurance components, with the ICS being applied separately to each. The ICS is a single framework applicable to all systemically important international insurers. Insurance risk is classified as life or non-life and treated differentially. There is no prohibition of composite insurers.
Sub-sectors treated separately	 Captive non-life insurers (dovetails with the non-life standard) Non-life insurers in run-off (dovetails with the non-life standard) Variable annuity providers (dovetails with the life standard) 	 New capital standards for health insurance are in the process of development. These will be broadly aligned with the general insurance approach. Category C (foreign general) insurers are required to maintain assets in Australia that exceed liabilities by the amount of the PCR. Run-off insurers are required to maintain a run-off plan. 	 While there is no special treatment for captives, the directive asks that methods used be 'proportional to the nature, scale and complexity of the risks', and specifically mentions captives in this context. UK run-off insurers must submit a scheme of operations to the BoE. Small insurers are exempted from Solvency II (and instead subject to national law). 	 The solvency shocks in the ICS are instantaneous, so there is no allowance for dynamic hedging. As the ICS deals with Internationally Active Insurance Groups ("IAIGs"), there are no specific provisions for captives or run-off insurers.

	New Zealand	Australia – LAGIC	Europe – Solvency II	IAIS – ICS
Grey areas	 Line between life and non-life business. GI business with long-term characteristics should 'have regard' to the life standard. Health business generally treated under non-life standard (given NZ product design). Non-insurance business. Aggregate solvency measures, defined in the standards as top-level insurer metrics, but largely ignored in licence conditions. 	 Private Health Insurance Act 2007, Life Insurance Act 1995 and Insurance Act 1973 appear to have mutually exclusive definitions of covered business. As there is no explicit allowance for using life techniques, GI business with long-term characteristics appears to be treated as short-term. 	 Health business treated as either 'similar to life' or 'similar to non- life', with insurance risk assessed accordingly. Overseas branches; whilst they must register with national authorities, it is unclear if Solvency II applies. 	 Follows Solvency II treatment of health business. Focus on IAIGs means that standard may need adaptation for domestic insurers.
Funds				
Statutory funds	 Yes, for all life insurance business (and for composite policies with majority life components). Small insurer exemption. According to the life solvency standard, statutory funds are a type of 'life fund', although this term is not used in IPSA. 	 Yes, for all life insurance business (note that there is no concept of composite policies) No small insurer exemption. Separate statutory funds for investment-linked life business, and for non-grandfathered overseas business. Life insurance - Capital requirements apply to each statutory fund, the shareholder's fund and the insurer as a whole. 	Solvency II does not require the establishment of statutory funds.	The ICS does not require the establishment of statutory funds.

	New Zealand	Australia – LAGIC	Europe – Solvency II	IAIS – ICS
	 IPSA does not specifically empower the application of solvency standards to statutory funds, although it is the RBNZ's practice to require (by licence condition) that statutory funds maintain a positive solvency margin. 	General insurance – there are no statutory funds and the capital requirement applies to the insurer as a whole.		
Other funds	 Under the life standard, the business of an insurer outside of a statutory fund is itself a life fund. Health insurance business issued by a life insurer and accounted for as life business is included in a life fund and has the life standard applied. Other health business should have the non-life standard applied but should still be part of a life fund if issued by a life insurer. 	 For life insurance, business outside the statutory fund is referable to the 'shareholder fund', which has its own capital requirement under the life standards. 	 National law may allow for the maintenance of 'ring-fenced funds' for various purposes, and for the imposition of (non-Solvency II) capital requirements on such funds. Any capital held in a ring-fenced fund and not available for other purposes is deducted from Own Funds (as it is not available to support business outside of the Funds). 	There are deductions from capital for defined benefit pension fund surpluses and for encumbered assets.
Non-life	 Insurers not subject to the life standard have no fund structures. Insurers that are only subject to the non-life standard are only required to maintain a positive solvency margin at the level of the insurer as a whole. 	• While there are no formal fund structures for general insurers, they are subject to an 'assets in Australia' test. This may achieve some of the same objectives as a statutory fund.	There is no 'Assets in Europe' test; in fact, Member states are prohibited from requiring that assets be located within the EU.	As the ICS is supra-national, there are no rules relating to asset domicile.

	New Zealand	Australia – LAGIC	Europe – Solvency II	IAIS – ICS
Valuation				
Relationship to GAAP	 For life insurance policy liabilities, the solvency standard relies on the GAAP balance sheet (NZ IFRS 4). For general insurance policy liabilities, the solvency standard relies on the GAAP balance sheet for outstanding claims liabilities, but adjusts the premium liabilities to use a prospective approach (similar to LAGIC below). 	 For life insurance policy liabilities, the valuation method specified in APRA's prudential reporting requirements (LPS 340) utilises the method specified in the accounting standards. The value of policy liabilities in the calculation of the capital base is adjusted to only reflect the BEL. For general insurance policy liabilities, APRA's specification of outstanding claims liabilities in GPS 340 aligns with the accounting standards. However, the premium liabilities (i.e. the liabilities for claims that have not yet been incurred) is specified differently to the accounting standards. 	 Assets and non-insurance liabilities are valued on a fair value basis for solvency purposes, regardless of how they are valued under GAAP. 	The ICS capital requirement is based on GAAP accounts, with adjustments to significant components (insurance liabilities, financial investments and instruments, and deferred taxes).

	New Zealand	Australia – LAGIC	Europe – Solvency II	IAIS – ICS
Valuation rules	 NZ IFRS 4 requires that assets backing insurance liabilities be valued using a fair value (or similar) approach. As insurers typically designate all their assets as supporting policy liabilities, all assets on the balance sheets are generally valued using a fair value approach. 	• For regulatory reporting purposes, APRA specifies its asset valuation requirements in <u>LRS_300</u> , but adjusts all the assets to fair value for solvency purposes, as per <u>LRS 112</u> . ³⁰	 Insurance liabilities ("technical provisions") are valued as the sum of a best estimate liability and a risk margin, regardless of how they are valued under the accounting standards of the local jurisdiction. This is intended to represent a market-consistent value, i.e. the amount that would be required to transfer the liabilities to another insurer. 	 Insurance liabilities are calculated as the sum of a current estimate and a margin over the current estimate. Other adjustments to items of the balance sheet include fair value adjustments and impairment adjustments.³¹
Solvency Cont	trol Levels			
Upper level	• Systemically important NZ <i>banks</i> are required to hold total capital equal to 18% (16% for other banks) of RWA. This has been designed to be sufficient to cover a 1-in-200 systemic event. ³²	 APRA's Prescribed Capital Amount ("PCA") as specified under LAGIC (LPS 110 and GPS 110) is designed to achieve a 99.5% probability of sufficiency over one year. 	The Solvency Capital Requirement ("SCR") under Solvency II is designed to achieve a 99.5% probability sufficiency over one year.	• The ICS capital requirement is a 99.5% Value at Risk (VaR), over a one-year time horizon, of adverse changes in the insurance group's qualifying capital resources.

 ³⁰ Under IFRS some assets are valued using methods other than fair value (e.g. bonds held to maturity).
 ³¹ Refer to section 5.1 of the Level 2 document for more detail.
 ³² Note that this is different to the criterion applied to NZ insurers, which is that capital should cover a 1- in – 200 chance of insurer failure

	New Zealand	Australia – LAGIC	Europe – Solvency II	IAIS – ICS
	• Between 9-18% of RWA, banks are still compliant with their conditions of registration but will subject to more intense scrutiny from the RBNZ. The severity of the additional scrutiny and other consequences (e.g. dividend restrictions) will increase as the banks approach 9%.			
Lower level	Below 9% of RWA, the bank breaches its condition of registration and its operations may be deemed non-viable.	 Alongside the PCA, APRA has also issued a solvency requirement under LPS 100, which is set to be 90% of the PCA. This level of capital triggers a few provisions of the Life Insurance Act 1995, including dividend restrictions and judicial management. 	• The Minimum Capital Requirement ("MCR"), which is designed to achieve an 85% probability of sufficiency over one year. The MCR is capped at 25-45% of the SCR.	• The ICS has no lower level. Note, however, that insurance groups subject to the ICS are also subject to local capital requirements.
Other	 There is only a single solvency control level for insurers, the minimum solvency margin specified by condition of licence (typically \$0). The specific details of the escalating supervisory response framework for NZ <i>banks</i> are currently still under internal discussion. 	General insurance only has a single solvency control level, while life insurance has two.	The SCR and MCR form the top and bottom rungs respectively of the ladder of intervention. Increasingly severe actions will be taken as a company's eligible capital falls below the SCR and approaches the MCR. Below the MCR, the company would lose its authorisation.	 ICP 17.3: The regulatory capital requirements include solvency control levels which trigger different degrees of intervention by the supervisor with an appropriate degree of urgency and requires coherence between the solvency control levels established and the associated corrective action that may be at the disposal of the insurer and/or the supervisor.

	New Zealand	Australia – LAGIC	Europe – Solvency II	IAIS – ICS
ICAAP / ORSA	 Licensed insurers are not required to complete an ICAAP. Registered banks are required to have an ICAAP process, as per BS12. 	 To support the solvency requirements, LAGIC requires that an insurer's board be responsible for specifying and overseeing an Internal Capital Adequacy Assessment Process ("ICAAP") that must be submitted to APRA. The ICAAP includes plans for how target levels of capital are to be met and the means available for sourcing additional capital where required. Further guidance, specified in CPG 110, specifies that an insurer is required to have a series of graduated trigger levels above the Prudential Capital Requirement ("PCR") to minimise the probability of breaching the PCR (with actions of varying degree of intensity as the buffers approach the PCR). 	 In addition to the MCR and SCR, each insurer is also required to carry out an Own Risk and Solvency Assessment ("ORSA"). The ORSA requires an insurer to identify all the risks to which it is subject and the related risk management processes and controls, including some quantitative risks that may not have been captured in the MCR and SCR. As part of the ORSA, the insurer must also quantify its ability to continue to meet the MCR and SCR over the defined business planning horizon, allowing for new business. The ORSA is one of the elements used by the supervisor when determining whether a further capital add-on is required. 	 ICP 17.3 - The supervisor requires the insurer to: determine, as part of its ORSA, the overall financial resources it needs to manage its business given its risk appetite and business plans; base its risk management actions on consideration of its economic capital, regulatory capital requirements, financial resources, and its ORSA; and assess the quality and adequacy of its capital requirements and any additional capital needs. The ICS does not address ICAAP or ORSA processes.

	New Zealand	Australia – LAGIC	Europe – Solvency II	IAIS – ICS
Solvency Calc	ulation			
Purposes	Neither the Solvency Standards nor IPSA state the purpose of holding capital.	 The Prescribed Capital of a fund is intended to provide sufficient assets to cover liabilities after losses at the 99.5% confidence level. Liabilities are at best estimate for life business and 75% PoS for non-life business. 	The Solvency Capital Requirement shall correspond to the Value-at-Risk ("VaR") of the basic own funds of an insurance or reinsurance undertaking subject to a confidence level of 99.5 % over a one-year period. Own funds are net of liabilities including risk margins.	 The ICS target criteria is a 99.5% Value at Risk (VaR), over a one- year time horizon, of adverse changes in the IAIG's qualifying capital resources. Capital resources are net of liabilities including "margins over current estimates". ICPs: "The purpose of capital is to ensure that, in adversity, an insurer's obligations to policy- holders will continue to be met as they fall due."
Principles	 Capital charges apply to specific items on the balance sheet. There is no special treatment for "systemically important insurers". 	 Market risk charges include impacts of solvency stresses on all balance sheet items. There is no special treatment for "systemically important insurers". 	 Market risk charges include impacts of solvency stresses on all balance sheet items. Arguably, systemically important insurers are given favourable treatment through the ability to develop and use internal models. 	 Market risk charges include effects linked to changes in policyholder behaviour. The IAIS has abandoned identification of "global systemically important insurers" in favour of a holistic framework for managing systemic risk.

	New Zealand	Australia – LAGIC	Europe – Solvency II	IAIS – ICS
Deductions vs charges	• The following items are 100% deducted from capital: intangibles (including goodwill), deferred tax assets, shares in related parties, some equity in financial institutions, value arising from the insurer's own credit risk, unsupported fair value gains, defined-benefit scheme surplus, declared dividends, encumbered overseas assets.	 LAGIC takes a similar approach to NZ solvency standards, fully deducting a similar list of items from the capital base using 'regulatory adjustments'. 	 The deductions under Solvency II are limited to goodwill, unquoted intangibles and deferred tax assets that can't be realised. A deduction is also made for the IAS37 value of material contingent liabilities. Solvency II accepts IFRS valuation of other items and applies capital charges accordingly. 	 The ICS takes a similar approach to LAGIC and NZ solvency. The ICPs contain a similar list of items, but allow for both the deduction and capital charge approaches.
Supervisory adjustments	 None within the solvency calculation. Supervisors may, however, impose minimum solvency margins through licence condition.³³ 	Contained within the determination of the Prudential Capital Requirement (= Prescribed Capital Amount + Supervisory Adjustments).	 Art 85 of the directive allows supervisory authorities to modify "non-compliant" technical provisions. Art 110 of the directive allows supervisory authorities to direct insurers to use specific parameters. 	 The ICS doesn't have a facility for supervisors to impose adjustments. The ICPs allow for some use of regulatory adjustments, providing there is a high degree of transparency.

³³ These licence conditions do not impact on the solvency margins and ratios disclosed by insurers

	New Zealand	Australia – LAGIC	Europe – Solvency II	IAIS – ICS
Hierarchy of risks	• The structure of the risk hierarchy is not clearly communicated. Some disparate risks are combined in a single charge (e.g. credit, equity and property), while some related risks (e.g. insurance and catastrophe) are treated separately.	Asset risks are separately stressed and combined using an aggregation formula. Catastrophe and insurance risks are treated separately.	 Solvency II categorises risk into major categories – Market, Default, Insurance, Operational etc. Within each category there are a number of risks – for example Market Risk is split into property, equity and interest rate risks. 	 ICS uses a hierarchy similar to Solvency II. ICPs: Risk assessment should address the interrelationships between risk categories as well as within a risk category
Diversification	• There is no allowance for diversification. Parameters within the solvency calculation have been decreased relative to international approaches to compensate.	 LAGIC has a diversification allowance which applies a correlation matrix between major risks. 	Capital charges are combined using correlation matrices between major risks, and, separately, sub-risks.	 The ICS employs a similar approach to Solvency II. ICPs: The insurer should be able to explain the allowance for diversification effects and should consider how dependencies may increase under stressed circumstances.
IRCC structure	The Insurance Risk Capital Charge (IRCC) takes the form of a stressed liability.	The capital charge is measured as the difference between adjusted and stressed policy liabilities.	All capital charges are measured as the change in net assets resulting from a specified stress. The insurance charge is a combination of lower-level stresses.	 Capital charges are based on the potential adverse changes in qualifying capital resources resulting from unexpected changes, events or other manifestations of the specified risks.

Appendix 2 – Impacts of IFRS 17

Component	Sectors Impacted	Description
Coverage period	Life, Health	The treatment of Yearly Renewable Term ("YRT") life insurance products ³⁴ under NZ IFRS 4 (and health insurance provided by life insurers) reflects its long-term economic value. However, under IFRS 17 there is a possibility that YRT life insurance and all health insurance (whether provided by life or non-life insurers) products may be treated as short-term (one-year) products. Treating YRT products as short-term may not be appropriate for solvency purposes as it may not reflect the longer-term viability of the product. In addition, insurers who choose to treat YRT as long-term for practical reasons may be penalised relative to those who select a short-term treatment.
Grouping	Life, Non-life	 Under NZ IFRS 4, life insurers currently divide business into Related Product Groups ("RPGs"), a classification that may no longer exist under IFRS 17. This affects the solvency standards in the following ways: The solvency standard calculates the Insurance Risk Charge at RPG level. While the solvency standards include an explicit definition of RPGs, this definition may not map directly to any group insurers may have under IFRS 17, and therefore impose an unnecessary burden on insurers. IFRS 17 groups are more granular than IFRS 4 groupings – is this lower level of granularity appropriate for solvency, or should the solvency standards allow for more pooling and cross-subsidisation? The factors specified in the Non-Life Insurance Risk Charge apply to "classes of business" (domestic property, domestic motor, etc.), which needs to be better defined. Additionally, this is an opportunity to reconsider whether or not the level at which business is aggregated for non-life business remains suitable.
Reinsurance	Life, Non-life	The solvency standards currently apply stresses to the net of reinsurance liability. This is not an issue under NZ IFRS 4 where the gross and reinsurance contracts are valued together. However, under IFRS 17 gross and reinsurance contracts are valued separately, which means that there is a possibility of a mismatch in the treatment of gross and reinsurance liabilities, in particular with relation to the length of the contract. At this stage we think this might be more problematic for life insurance (specifically YRT), but the impacts on the full range of insurance business should be considered when developing a solution.

³⁴ YRT products are guaranteed renewable policies with premiums that increase each year in line with the policyholder's age (to reflect the increased claims costs associated with older ages). This is currently the most prevalent structure of modern life insurance business in the market.

Component	Sectors Impacted	Description
Policy liability	Life, Non-life	Life insurance liabilities under NZ IFRS 4 Appendix C (including health insurance by life insurers) are calculated on a best estimate basis, i.e. not deliberately overstated or understated. The solvency stresses, designed to achieve a 99.5% probability of sufficiency, have been calibrated based on the assumption that the best estimate corresponds to the mean of the distribution. The general method under IFRS 17 introduces the concept of a "risk adjustment" which is added on top of the best estimate. This has the following implications for solvency:
		Should the stresses be applied on top of the risk adjustment (akin to the current non-life method), or just on the BEL? ³⁵
		If the risk adjustment is to be included in the stress, the insurance risk charge stresses may need to be recalibrated to achieve a 99.5% probability of sufficiency.
		What should be the treatment for insurers who choose to use the simplified approach? Under the simplified approach, there is no explicit risk adjustment.
		General insurance liabilities under NZ IFRS 4 Appendix D (including health insurance other than by life insurers) are calculated as the sum of the current estimate (defined in the standard as the mean of the distribution) and a risk margin to represent the inherent uncertainty in the current estimate and future cash flows. ³⁶ The risk margins at the 75% ³⁷ probability of sufficiency prescribed in the solvency standard plus the solvency risk charges, together are calibrated to achieve a probability of sufficiency of 99.5%. While this may not be so much of a problem under the IFRS 17 general method, it is likely that most classes of general insurance will be valued using the simplified valuation method. As the simplified method does not include an explicit risk adjustment, the current standard and risk charges may need to be recalibrated.

 ³⁵ The Best Estimate Liability ("BEL") is the net present value of future cash inflows and outflows under a policy. The life insurance policy liability is comprised of the BEL and the Present Value of Future Profit Margins, designed to smooth the recognition of profits over time.
 ³⁶ Note that the risk margin under NZ IFRS 4 is not necessarily the same as the risk adjustment under IFRS 17.
 ³⁷ 90% for the run-off solvency standard.

Component	Sectors Impacted	Description
Deferred Acquisition Costs	Life, Non-life	Under NZ IFRS 4, acquisition costs for life insurance business are amortised across the entire term of the policy, and the deferred acquisition cost asset ("DAC asset") is implicit within the negative policy liabilities ³⁸ . Because of this, there is no explicit allowance for DAC in the life insurance solvency standard. Instead, the DAC is allowed for in the life standard through the application of a CTV minimum ³⁹ in the Insurance Risk Charge.
		The simplified method under IFRS 17 allows the insurer a choice between expensing acquisition costs, or amortising them over the current contract coverage period and across expected future renewals (on a systematic and rational basis). The latter requires the insurer to set up an explicit asset relating to acquisition costs allocated to future renewals on the balance sheet. The life standard will therefore need to be adjusted to ensure that the DAC is accounted for appropriately.
		This may also be an issue if insurers choose to treat the underlying policy as single-year contracts, but amortise the DAC across future policy renewals.
		At this stage we think that the non-life standard is likely to be less affected by the change in treatment of the DAC than the life standard, as the DAC is an explicit item on the balance sheet. However, there may be flow on impacts that need to be considered.
Onerous contracts	Life, Non-life	NZ IFRS 4 has a liability adequacy test ("LAT"), assessed at valuation date, to increase policy or premium liabilities if premiums are inadequate for benefits, claims and certain expenses during the period of future cover. The non-life solvency standard modifies the accounting LAT by specifying a probability of sufficiency and a different period for the calculations. There is also an interaction between the DAC and the LAT in both the accounting and the non-life solvency standards, in that the DAC is to be written off if there is a deficiency. ⁴⁰ IFRS 17 requires onerous contracts to be accounted for separately, but the identification of onerous contracts is typically at inception rather than at valuation date.
Onerous contracts	Life, Non-life	NZ IFRS 4 has a liability adequacy test ("LAT"), assessed at valuation date, to increase policy or premium liabilities if premiums are inadequate for benefits claims and certain expenses during the period of future cover. The non-life solvency standard modifies the accounting LAT by specifying a probability of sufficiency and a different period for the calculations. There is also an interaction between the DAC and the LAT in both the accounting and the non-life solvency standards, in that the DAC is to be written off if there is a deficiency. ⁴⁰ IFRS 17 requires onerous contracts to be accounted for separately, but the identification of onerous contracts is typically at inception rather than at valuation date.

 ³⁸ Negative policy liabilities are common for modern life insurance products in New Zealand.
 ³⁹ The Insurance Risk Charge is calculated as the greater of the CTV and the stressed BEL. If the stressed BEL is negative as is common for many modern life insurance products, the CTV will automatically apply.
 ⁴⁰ The life accounting standard requires a write-off of "intangibles".

Appendix 3 - Determining the Solvency Requirement

Life insurance



Non-life insurance



Notes

Life insurance

- Pandemic risk charge expected cost of extra claims over following year from a 1‰ increase in mortality rates
- Other extreme event charge financial impact of an extreme event on the insurer
- RPG = related product group
- Solvency liabilities are subject to a floor of the NZ IFRS Liabilities (Best Estimate Liability + Value of Future Profit Margins). Implicitly, the prudential margins cannot be less than the value of future profit margins

Non-life insurance

- Extreme event exposure is defined as the greater of losses arising from two earthquake scenarios calibrated to a 1000 year return period and a non-earthquake scenario calibrated to a 250 year return period.
- The long-term insurance risk capital charge is to be determined having regard to principles in the life solvency standard.

Other notes

- Cells marked in green are not formally part of the solvency requirement, however, as (a) deductions from capital or (b) balance sheet obligations, have a similar effect.
- Reinsurance Risk Capital Factor is a function of the reinsurer's credit rating
- In the Risk-Weighted Exposures Charge, "asset exposure" should be taken to include the value of any
 contingent liabilities. The value of leases is non-negative and is taken to be the value of the right-of-use
 asset less the value of the lease liability.
- The delta factor is derived from the application of appropriate shocks to the underlying instruments.

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Darrel Scott

Member of the International Accounting Standards Board (Board)

IFRS 17 *Insurance Contracts* sets out the accounting requirements for insurance contracts, including reinsurance contracts held. Under IFRS 17, a reinsurance contract held is accounted for as a standalone contract, independent of the accounting for the underlying insurance contracts.

For many entities, IFRS 17 represents a significant change. Common existing practice is to account for reinsurance contracts held using a 'mirroring approach', essentially matching reinsurance contract revenue, costs, assets and liabilities to the underlying insurance contracts.

In determining the IFRS 17 approach to reinsurance, the Board took note of existing practice. However, the Board concluded that separate accounting is necessary to truly reflect the economics of an entity's rights and obligations under insurance contracts it issues and reinsurance contracts it holds. The primary insurer is obligated to pay the full amount of the claims to the policyholder under the insurance contract, irrespective of whether the reinsurer is obliged to perform or able to meet its obligations. Thus, the performance risks for reinsurance contracts held differ from those for underlying insurance contracts even when their terms and cash flows are identical. In addition, few reinsurance contracts have terms and cash flows that are identical to the terms and cash flows of the underlying contracts, making separate accounting even more relevant.

IFRS 17 includes requirements specific to reinsurance contracts held to reflect the fact that the contracts are held rather than issued. This pocket guide is a helpful reference tool on how IFRS 17 applies to reinsurance contracts held and includes useful insights on implementing IFRS 17 from the discussions of the Transition Resource Group for IFRS 17 (TRG).

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1. Scope

Requirements¹

IFRS 17 applies to:

- (a) insurance contracts issued (including reinsurance contracts issued);
- (b) reinsurance contracts held; and
- (c) investment contracts with discretionary participation features issued by an entity that also issues insurance contracts.

A contract is an insurance contract if it transfers significant insurance risk. A contract transfers significant insurance risk only if there is a scenario² in which the issuer has a possibility of a loss on a present value basis.

What is significant insurance risk?

Insurance risk is significant if an insured event could cause the issuer to pay additional amounts that are significant in any single scenario² even if:

- (a) the insured event is extremely unlikely; or
- (b) the expected (ie probability-weighted) present value of the contingent cash flows is a small proportion of the expected present value of the remaining cash flows from the insurance contract.

Definitio	ons
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Contract	A contract is an agreement between two or more parties that creates enforceable rights and obligations.
Insurance contract	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.
Reinsurance contract	An insurance contract issued by one entity (the reinsurer) to compensate another entity for claims arising from one or more insurance contracts issued by that other entity (underlying insurance contracts).

¹ Paragraphs 3–13 and B2–B35 of IFRS 17 and paragraphs BC63–BC114 of the Basis for Conclusions on IFRS 17.

² Applying paragraph B18 of IFRS 17 the scenario must have commercial substance, ie a discernible effect on the economics of the transaction.

Reinsurance contracts held³

IFRS 17 requires a reinsurance contract held to be accounted for separately from the underlying insurance contracts to which it relates. This is because an entity that holds a reinsurance contract does not normally have a right to reduce the amounts it owes to the underlying policyholder by amounts it expects to receive from the reinsurer.

Reinsurance contracts often provide coverage for many underlying contracts, and so the issuer (ie the reinsurer) may not be exposed to the possibility of a significant loss even if each individual underlying contract exposes the insurer to significant insurance risk. However, applying IFRS 17, even if a reinsurance contract does not expose the issuer to the possibility of a significant loss, it is still deemed to transfer significant insurance risk if it transfers substantially all the insurance risk relating to the reinsured portion of the underlying insurance contracts to the reinsurer.

Some contracts that are, in legal form, financial reinsurance contracts return all significant risks to the policyholder. Such contracts are normally financial instruments or service contracts and would therefore fall outside the scope of IFRS 17.

TRG⁴ insights—separating components of a reinsurance contract held

Reinsurance contracts held can provide coverage for underlying insurance contracts that are included in different groups of insurance contracts.⁵

In February 2018, the TRG discussed an implementation question on whether a reinsurance contract held should be separated into components for measurement purposes to reflect the underlying insurance contracts covered.

TRG members observed that a contract with the legal form of a single contract is generally considered a single contract in substance, however:

- (a) in some circumstances, the legal form of a single contract might not reflect the substance of its contractual rights and obligations;
- (b) overriding the presumption that the legal form of a single contract reflects the substance of its contractual rights and obligations involves significant judgement and careful consideration of all relevant facts and circumstances; and
- (c) the fact that a reinsurance contract held provides cover for underlying insurance contracts that are included in different groups is not, in itself, sufficient to conclude that accounting for the reinsurance contract held as a single contract does not reflect the substance of its contractual rights and obligations.

³ Paragraph B19 of IFRS 17 and BC298 of the Basis for Conclusions on IFRS 17.

⁴ The Transition Resource Group for IFRS 17 (TRG) provides a public forum for stakeholders to follow the discussions of questions raised on the implementation of IFRS 17. Meeting recordings, agenda papers, meeting summaries and a submissions log are available on the TRG page at https://www.ifrs.org/groups/transition-resource-group-for-insurance-contracts/

⁵ Groups of insurance contracts are discussed in Section 2 (Level of aggregation).

2. Level of aggregation

Requirements⁶

To recognise and measure insurance contracts, portfolios of insurance contracts⁷ are identified and divided into groups of insurance contracts issued no more than one year apart. At a minimum, a portfolio is divided into:

- (a) a group of contracts that are onerous at initial recognition, if any;
- (b) a group of contracts that at initial recognition have no significant possibility of becoming onerous subsequently, if any; and
- (c) a group of remaining contracts in the portfolio, if any.

Reinsurance contracts held⁸

A reinsurance contract held cannot be considered onerous applying IFRS 17.⁹ Therefore, the requirements for dividing a portfolio into groups are modified for reinsurance contracts held. For a group of reinsurance contracts held, an insurer expects either to incur a net cost of purchasing the reinsurance or, sometimes, make a net gain from purchasing the reinsurance. As such, applying the grouping requirements to reinsurance contracts held, at a minimum, a portfolio is divided into:

- (a) a group of contracts on which there is a net gain at initial recognition, if any;
- (b) a group of contracts on which at initial recognition there is no significant possibility of a net gain arising subsequently, if any; and
- (c) a group of remaining contracts in the portfolio, if any.

For some reinsurance contracts held, applying the requirements in IFRS 17 will result in a group that comprises a single contract.

⁶ Paragraphs 14–24 of IFRS 17 and paragraphs BC115–BC139 of the Basis for Conclusions on IFRS 17.

⁷ A portfolio comprises contracts subject to similar risks and managed together.

⁸ Paragraph 61 of IFRS 17.

⁹ Gains and losses on reinsurance contracts held are discussed in Section 6 (Measurement—contractual service margin).

3. Recognition

Requirements¹⁰

A group of insurance contracts issued is recognised from the earliest of:

- (a) the beginning of the coverage period of the group of insurance contracts;
- (b) the date the first payment from a policyholder in the group becomes due; or
- (c) for a group of onerous contracts, when the group becomes onerous.

Reinsurance contracts held¹¹

The requirements on when to recognise a group of reinsurance contracts held are different depending on whether the reinsurance contract held covers the losses of separate insurance contracts on a proportionate basis (proportionate reinsurance contracts) or the reinsurance contract held covers aggregate losses from underlying contracts in excess of a specified amount (non-proportionate reinsurance contracts).

A group of proportionate reinsurance contracts held is recognised at the later of:

- (a) the beginning of the coverage period of the group; or
- (b) the initial recognition of any underlying insurance contract.

This means an entity will not recognise a group of proportionate reinsurance contracts held until it has recognised at least one of the underlying insurance contracts.

A group of non-proportionate reinsurance contracts held is recognised at the beginning of the coverage period of the group.

¹⁰ Paragraphs 25–28 of IFRS 17 and paragraphs BC140–BC145 of the Basis for Conclusions on IFRS 17.

¹¹ Paragraph 62 of IFRS 17 and paragraphs BC304–BC305 of the Basis for Conclusions on IFRS 17.
4. Measurement—estimates of future cash flows

Requirements¹²

The measurement of a group of insurance contracts includes the present value of all future cash flows within the boundary of each contract in the group. The estimates of future cash flows are:

- (a) a probability-weighted mean of the full range of possible outcomes;
- (b) determined from the perspective of the entity, provided the estimate are consistent with observable market prices for market variables;
- (c) current-estimates reflect conditions existing at the measurement date; and
- (d) explicit—the risk adjustment for non-financial risk is estimated separately from the other estimates.

Reinsurance contracts held¹³

The amount an entity pays for a reinsurance contract held consists of premiums it pays minus any amounts paid by the reinsurer to the entity as compensation for expenses incurred (for example, ceding commissions). The amount an entity recognises for reinsurance contracts held can be viewed as:

- (a) the reinsurer's share of the risk-adjusted expected present value of the cash flows generated by the underlying insurance contracts; and
- (b) a contractual service margin (CSM) that makes the initial measurement of the reinsurance asset equal to the amount the entity pays for the reinsurance contract.¹⁴

Consistent assumptions are used when measuring estimates of the present value of future cash flows for a group of reinsurance contracts held and estimates of the present value of future cash flows for the group(s) of underlying insurance contracts. This includes any associated adjustments for the financial risk and the time value of money arising from the reinsurance contracts held. As a result, the cash flows used to measure the reinsurance contracts held reflect the extent to which those cash flows depend on the cash flows of the underlying contracts that the reinsurance contract held covers.

In addition, the expected present value of future cash flows includes an adjustment for the risk that the reinsurer may fail to satisfy its obligations under the reinsurance contract held. Changes in the fulfilment cash flows that result from changes in the risk of non-performance by the reinsurer do not adjust the contractual service margin. Instead, these changes are reflected in profit or loss when they occur.

¹² Paragraphs 33–36 and B36–B85 of IFRS 17 and paragraphs BC147–BC205 of the Basis for Conclusions on IFRS 17.

¹³ Paragraphs 63 and 67 of IFRS 17, and paragraphs BC299–BC300 and BC307–BC309 of the Basis for Conclusions on IFRS 17.

¹⁴ See Section 6 (Measurement—contractual service margin).

O TRG insights—boundary of reinsurance contracts held

IFRS 17 specifies which cash flows are within the boundary of an insurance contract. In February 2018 and May 2018, the TRG discussed implementation questions on how the contract boundary requirements in IFRS 17 apply to reinsurance contracts held.

TRG members observed that:

- (a) cash flows are within the contract boundary if they arise from substantive rights and obligations of the entity that exist during the reporting period in which the entity is compelled to pay amounts to the reinsurer or in which the entity has a substantive right to receive services from the reinsurer; and
- (b) the boundary of a reinsurance contract held might include cash flows related to underlying insurance contracts that are expected to be issued in the future.

TRG members discussed whether including all expected future cash flows within the boundary of reinsurance contracts held, including those relating to future underlying insurance contracts, is consistent with the measurement of the underlying insurance contracts. This is consistent because all expected future cash flows within the contract boundary are included in the measurement of a group of insurance contracts issued. Including expected future cash flows related to underlying insurance contracts that are expected to be issued in the future in the measurement of reinsurance contracts held reflects the entity's substantive right to receive services from the reinsurer related to those future underlying contracts.

5. Measurement—risk adjustment for non-financial risk

Requirements¹⁵

The risk adjustment for non-financial risk reflects the compensation an entity requires for bearing the uncertainty about the amount and timing of the cash flows from non-financial risk as the entity fulfils insurance contracts.

Reinsurance contracts held¹⁶

The requirements in IFRS 17 for the risk adjustment for non-financial risk are modified for reinsurance contracts held. For reinsurance contracts held, the risk adjustment for non-financial risk represents the amount of risk being transferred by the holder of the group of reinsurance contracts to the reinsurer.

The following illustration demonstrates the transfers of risk between the insurer and the reinsurer.



¹⁵ Paragraphs 37 and B86–B92 of IFRS 17 and paragraphs BC206–BC217 of the Basis for Conclusions on IFRS 17.

¹⁶ Paragraph 64 of IFRS 17.

6. Measurement—contractual service margin

Requirements¹⁷

The contractual service margin for a group of insurance contracts represents the unearned profit the entity will recognise as it provides services in the future. At initial recognition, the contractual service margin is the amount that results in no income or expenses arising from:

- (a) the initial recognition of the fulfilment cash flows;
- (b) the derecognition of any asset or liability recognised for insurance acquisition cash flows; and
- (c) any cash flows arising from the contracts in the group at that date.

At the end of the reporting period, the carrying amount of the contractual service margin is adjusted to reflect:

- (a) the effect of any new contracts added to the group;
- (b) interest accreted on the carrying amount of the contractual service margin;
- (c) changes in the fulfilment cash flows relating to future service;¹⁸
- (d) the effect of any currency exchange differences; and
- (e) the amount recognised as insurance revenue because of the transfer of services in the period.

The amount of the contractual service margin recognised as insurance revenue because of the transfer of services in the period is determined by the allocation of the contractual service margin remaining at the end of the reporting period over the current and remaining coverage period of the group of reinsurance contracts held based on coverage units. The number of coverage units in a group is the quantity of coverage provided by the contracts in the group, determined by considering for each contract the quantity of benefits and expected coverage period.

For insurance contracts issued, IFRS 17 prohibits the contractual service margin from becoming negative (ie when contracts are in an expected loss position). Therefore, expected losses on a group of insurance contracts issued are recognised immediately in profit or loss. This provides timely information about loss-making groups of insurance contracts.

¹⁷ Paragraphs 43–46 and B96–B119 of IFRS 17 and paragraphs BC218–BC287 of the Basis for Conclusions on IFRS 17.

¹⁸ Except to the extent that such increases in the fulfilment cash flows exceed the carrying amount of the contractual service margin, giving rise to a loss; or such decreases in the fulfilment cash flows are allocated to the loss component of the liability for remaining coverage.

Reinsurance contracts held¹⁹

The contractual service margin for a reinsurance contract held represents the cost of purchasing reinsurance. This is different from the contractual service margin for underlying insurance contracts which represents unearned profit on those contracts.

The cost of purchasing reinsurance is recognised as services are received under the reinsurance contract held. As an exception, if the reinsurance contract held covers events that have already occurred, the net cost at initial recognition is recognised immediately in profit or loss.

The amount an entity pays for reinsurance typically exceeds the expected present value of cash flows generated from that reinsurance plus the risk adjustment for non-financial risk. As such, the contractual service margin for a group of reinsurance contracts held at initial recognition typically represents a net cost of purchasing reinsurance.

In some cases, the contractual service margin for a group of reinsurance contracts held may represent a net gain on purchasing reinsurance (ie the expected cash inflows from the reinsurer are higher than the expected cash outflows to the reinsurer plus the risk adjustment for non-financial risk). In these cases, IFRS 17 treats the apparent gain on initial recognition as a reduction in the cost of purchasing reinsurance, or in other words, as though the entity receives a discount on the reinsurance premiums it expects to pay. Accordingly, the apparent net gain is recognised as services are received under the reinsurance contract held.

In some of these cases, at initial recognition, an entity might expect to make a loss on the underlying insurance contracts issued and a net gain on the reinsurance contract held. The treatment of an expected loss on the underlying contracts and the apparent net gain on initial recognition of a reinsurance contract held is asymmetric:

- (a) an expected loss on the underlying insurance contracts is recognised immediately. This provides users of the financial statements with timely information about losses related to those contracts.
- (b) the reduction in the cost of purchasing reinsurance is recognised as services are received under the reinsurance contract held. This is consistent with the principle that expenses are recognised when services are received. This treatment results in the appropriate recognition of the net cost or gain on purchasing reinsurance as the reinsurance services are received.

continued...

¹⁹ Paragraphs 65–68 of IFRS 17 and paragraphs BC310–BC315 of the Basis for Conclusions on IFRS 17.

...continued

At the end of each reporting period, the carrying amount of the contractual service margin for a group of reinsurance contracts held is adjusted to reflect changes in estimates in the same manner as a group of insurance contracts issued, but with one modification. In some situations, an underlying group of insurance contracts becomes onerous after initial recognition because of adverse changes in estimates of fulfilment cash flows relating to future service and the entity recognises a loss on the group of underlying contracts. In these situations, for reinsurance contracts held, the corresponding changes in cash inflows would not adjust the contractual service margin of the group of reinsurance contracts held. The result is that the entity recognises no net effect of the loss and gain in the profit or loss for the period to the extent that the change in the fulfilment cash flows on the group of underlying contracts held.

Applying IFRS 17, reinsurance contracts held cannot be onerous. Accordingly, the requirements on onerous contracts do not apply.

The following illustration demonstrates the contractual service margin of a group of reinsurance contracts held as a net cost on initial recognition and as a net gain on initial recognition.



TRG insights—identifying coverage units for allocating the CSM

For reinsurance contracts held, an amount of the contractual service margin is recognised in profit or loss as services are received in the period.

In May 2018, the TRG discussed an implementation question on how to determine the quantity of benefits for identifying coverage units. The TRG observed that the principle of coverage units is to reflect the services provided in a period under a group of insurance contracts. The same principle applies to all insurance contracts within the scope of IFRS 17, including reinsurance contracts held. For reinsurance contracts held, the principle relates to services received from the reinsurer rather than services provided by the insurer. In applying this principle for reinsurance contracts held, the terms of the contract should be considered, for example, the existence of an aggregate limit, as well as the relevant facts and circumstances relating to the underlying insurance contracts.

7. Premium allocation approach

Requirements²⁰

IFRS 17 allows an entity to simplify the measurement of some groups of insurance contracts by applying the premium allocation approach (PAA). The premium allocation approach can be used to measure a group of insurance contracts only if at inception of the group:

- (a) the entity reasonably expects that such simplification would produce a measurement of the liability for remaining coverage for the group that would not differ materially from the one that would be produced applying the general model; or
- (b) the coverage period for each contract in the group is one year or less.

The following illustration demonstrates the application of these eligibility criteria.



Reinsurance contracts held²¹

An entity may use the premium allocation approach to simplify the measurement of a group of reinsurance contracts held, if at inception of the group:

(a) the entity reasonably expects that the resulting measurement would not differ materially from the measurement applying the general model; or

continued...

²⁰ Paragraphs 53–59 of IFRS 17 and paragraphs BC288–BC295 of the Basis for Conclusions on IFRS 17.

²¹ Paragraphs 69–70 of IFRS 17 and paragraph BC301 of the *Basis for Conclusions on IFRS 17*.

...continued

(b) the coverage period for each contract in the group of reinsurance contracts held is one year or less.

Because groups of reinsurance contracts held are separate from groups of underlying insurance contracts, the assessment of whether a group of reinsurance contracts meets the conditions for applying the premium allocation approach may differ from the assessment of whether the group(s) of underlying contracts meet(s) those conditions.

The following example demonstrates the premium allocation approach eligibility assessment for a group of underlying insurance contracts and a group of reinsurance contracts held that provide reinsurance coverage on the group of underlying contracts.

Example—PAA eligibility (underlying contracts and reinsurance contracts held)

1. Group of underlying insurance contracts

An entity issues a group of three underlying insurance contracts within a one-year period. These contracts each have a coverage period of one year. The coverage period for the group is two years.



continued...

...continued

2. Group of reinsurance contracts held

The entity purchases reinsurance for the group of underlying contracts. In this example, the single reinsurance contract held is the only contract in the group of reinsurance contracts held.

Year 1Year 2Group of reinsurance contracts heldReinsurance contract heldThe coverage period for the contract in the group is two years. Therefore, the group
of reinsurance contracts held does not meet the criterion for the premium allocation
approach of the coverage period being one year or less. However, it may meet the

approach of the coverage period being one year or less. However, it may meet the criterion that the entity reasonably expects the resulting measurement not to differ materially from the measurement applying the general model.

To determine whether this criterion is met, the insurer will need to assess the relevant facts and circumstances. The criterion cannot be met if, at inception of the group, the entity expects significant variability in the fulfilment cash flows that would affect the measurement of the reinsurance asset for remaining coverage during the period before a claim is incurred.

8. Variable fee approach

Requirements²²

The variable fee approach (VFA) applies to insurance contracts with direct participation features (VFA contracts). VFA contracts are substantially investment-related services contracts under which the entity promises an investment return based on underlying items. An insurance contract meets the definition of a VFA contract if, and only if, at inception:

- (a) the contractual terms specify that the policyholder participates in a clearly identified pool of underlying items;
- (b) the entity expects to pay the policyholder an amount equal to a substantial share of the fair value returns on the underlying items; and
- (c) a substantial proportion of any changes in the amounts to be paid to the policyholder vary with the change in fair value of the underlying items.

Under a VFA contract, the entity has an obligation to pay policyholders an amount equal in value to specified underlying items minus a variable fee for service. To reflect the different nature of VFA contracts, returns to the entity from underlying items are viewed as part of the compensation that the entity charges to the policyholder for services provided by the insurance contract, rather than as a share of returns from unrelated investments. This is achieved by adjusting the contractual service margin for more changes than those affecting the contractual service margin for insurance contracts.

Reinsurance contracts held²³

For reinsurance contracts held, the entity and the reinsurer do not share in the returns on underlying items and so the VFA criteria are not met, even if the underlying insurance contracts issued are VFA contracts. The contractual service margin for a group of reinsurance contracts held represents the net cost (or net gain) of purchasing reinsurance, considering the rights and obligations of the entity under the reinsurance contract. The insurer does not receive investment-related services from the reinsurer.

²² Paragraph 45 and B101–B118 of IFRS 17 and paragraphs BC238–BC269 of the Basis for Conclusions on IFRS 17.

²³ Paragraph BC248 of the Basis for Conclusions on IFRS 17.

9. Presentation

Requirements²⁴

An entity presents separately in the statement of financial position:

- (a) insurance contracts issued that are assets;
- (b) insurance contracts issued that are liabilities;
- (c) reinsurance contracts held that are assets; and
- (d) reinsurance contracts held that are liabilities.

Amounts recognised in the statements of financial performance are disaggregated into:

- (a) an insurance service result (comprising insurance revenue and insurance service expenses); and
- (b) insurance finance income or expenses.

Reinsurance contracts held²⁵

An entity is prohibited from offsetting reinsurance contract assets held against related underlying insurance contract liabilities in the statement of financial position.

Consistently with prohibiting offsetting of reinsurance contract assets held and insurance contract liabilities, income or expenses from reinsurance contracts held are presented separately from expenses or income from insurance contracts issued. Income or expenses from a group of reinsurance contracts held, other than insurance finance income or expenses, may be presented either:

- (a) as a single amount (net presentation); or
- (b) separately as amounts recovered from the reinsurer and an allocation of the premiums paid (gross presentation).

If an entity presents separately amounts recovered from the reinsurer and an allocation of the premiums paid for reinsurance contracts held:

- (a) cash flows that are **contingent on claims** on the underlying contracts are treated as part of the claims that are expected to be reimbursed under the reinsurance contract held; and
- (b) cash flows that the entity expects to receive from the reinsurer that are not contingent on claims of underlying contracts are treated as a reduction in the premiums to be paid to the reinsurer.

continued...

²⁴ Paragraphs 78–92 and B120–B136 of IFRS 17 and Paragraphs BC328–BC344 of the Basis for Conclusions on IFRS 17.

²⁵ Paragraph 86 of IFRS 17 and paragraphs BC345–BC346 of the Basis for Conclusions on IFRS 17.

...continued

The allocation of premiums paid on reinsurance contracts held must not be presented as a reduction in revenue.

The following example illustrates presentation of the insurance service result with income or expenses from reinsurance contracts held presented both net and gross.

Net presentation exampleIn currency units2021Insurance revenue10,000Insurance service expenses(7,000)Net expense from reinsurance contracts(500)Insurance service result2,500Gross presentation example2,500In currency units2021Insurance revenue10,000Insurance service expenses(7,000)Amounts recovered from reinsurance1,000Reinsurance premiums(1,500)Insurance service result2,500	Example—presentation of insurance service result		
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Amounts recovered from reinsurance1,000Reinsurance premiums(1,500)Insurance service result2,500	Insurance service expenses	(7,000)	
Reinsurance premiums(1,500)Insurance service result2.500	Amounts recovered from reinsurance	1,000	
Insurance service result 2.500	Reinsurance premiums	(1,500)	
	Insurance service result	2,500	

10. Disclosures

Requirements²⁶

The objective of the disclosure requirements is for an entity to disclose information in the notes that, together with the information provided in the financial statements, gives a basis for users of financial statements to assess the effect that contracts within the scope of IFRS 17 have on an entity's financial position, financial performance and cash flows. Reconciliations are required to provide different types of information about the insurance service result.

Reinsurance contracts held²⁷

The objective of the disclosure requirements in IFRS 17 applies to all contracts within the scope of IFRS 17, including reinsurance contracts held.

Separate reconciliations required by IFRS 17 shall be disclosed for insurance contracts issued and reinsurance contracts held. The reconciliation disclosure requirements shall be adapted to reflect the features of reinsurance contracts held that differ from insurance contracts issued; for example, the generation of expenses or reduction in expenses rather than revenue.

Separate information shall be provided for insurance contracts issued and reinsurance contracts held, explaining when an entity expects to recognise the contractual service margin remaining at the end of a reporting period in profit or loss.

Applying IFRS 17, revenue does not arise from reinsurance contracts held. Accordingly, the requirements for revenue, including the related disclosure requirements, do not apply to reinsurance contracts held.

²⁶ Paragraphs 93–132 of IFRS 17 and paragraphs BC347–BC366 of the Basis for Conclusions on IFRS 17.

²⁷ Paragraphs 98 and 109 of IFRS 17.

Resources available

Reinsurance resources

Webcast: Reinsurance contracts held

Reinsurance contracts held—an example of proportionate reinsurance coverage

Other educational materials

IFRS 17 Feedback Statement IFRS 17 Project Summary

<u>II NS 17 TTOJECT Summary</u>

IFRS 17 Effects Analysis

IFRS 17 Fact Sheet

IFRS 17 Key Terms

The accounting model explained in one page

The Essentials—Busting insurance jargon

Investor Perspectives: Insurance Contracts—Accounting to reflect economics

More materials, including webcasts introducing the key requirements in IFRS 17, are available on the IFRS 17 implementation page.

Transition Resource Group for IFRS 17

All TRG meeting recordings, agenda papers and meeting summaries are available on the TRG for IFRS 17 *Insurance Contracts* page on the IFRS Foundation website.

go.ifrs.org/IFRS-17implementation



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Review

Takaful: An Islamic insurance instrument

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The Takaful concept evolved from individual common interest during the industrial era of the early 1900's. Only eighty million of the world's 2.5 billion poor are currently covered by some form of microinsurance. Only 3% of the poor in India and China are insured, and only 0.3% of the poor in Africa are insured. In 23 of the 100 poorest countries in the world, there is currently no identified micro-insurance activity. The majority of the population is in the low-income bracket. On top of that, society's awareness regarding the importance of insurance is rather low. In this paper, it will be stressed that efforts still need to be directed towards educating the public on Islamic insurance to appreciate the protection aspects that insurance can offer. Conventional insurance involves the elements of uncertainty, gambling, and interest, all of which are unacceptable under Islamic law. There existed anxiety among Muslims regarding the inconsistency of conventional banking and insurance in compliance with Islamic laws. This allowed the creation of a new industry, takaful, which offered risk protection and savings products to the world's 1.6 billion Muslims. One of the greatest challenges facing the takaful industry is the misconception that it is exclusively for Muslims. Takaful products have attracted even non-Muslim communities, despite the obvious religious and cultural differences. Nonetheless, the interest shown by non-Muslims and the support of Muslims is not enough to promote the awareness and the growth of takaful and what it has to offer. It is this lack of awareness that presents one of the greatest challenges to the development and growth of the national and global industry.

Key words: Takaful, insurance, kafal, conventional insurance, gambling, interest.

INTRODUCTION

The article aims to stress the preference for *takaful* above conventional insurance. The conventional model of insurance will be discussed first, followed by the *takaful* model. After the discussion of these two models of insurance, the article includes an evaluation or comparison between them. This will enable the reader to make a sound choice between these two forms of insurance.

The fact that *takaful* insurance is available to both Muslims and non-Muslims is of paramount importance. Takaful has an explicit ethical structure which can be marketed to both Muslims and non-Muslims.

The economic recession is fast becoming a worldwide economic catastrophe. This economic crisis is the worst

ever since the Great Depression in the United States in 1930. This crisis creates fresh opportunities for the insurance industry. Amidst the impending global economic crisis, *takaful* is set to continue concentrating on upward business growth. Although facing economic crisis, the low market penetration in the *Shari'ah* insurance opportunity creates an attractive opportunity for the insurance players to continue to grow and prosper (Ahmad, 2009).

In Islam, the basic principle of investment is that reward must be accompanied by risk. *Takaful* businesses cannot therefore invest in products which are debt-based, have a guaranteed or minimum return on the investment, or are based on *haram* practices (casinos and gambling companies) (Anwar, 2008). *Takaful* is the Islamic answer to the modern concept of insurance. In Islam, insurance is free from gambling and interest (Saleh, 1986).

Under the takaful model, the ethical nature of this

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Figure 1. Khan (2008, p. 7) graphical illustration of the difference between takaful and the conventional western model.

instrument is prevalent, while the conventional form of insurance lacks this characteristic. This ethical nature of *takaful* triggers the hegemony of *takaful* as an Islamic instrument to be discussed in depth. Takaful, however, is not to be confined to Muslims only. There is a need for *takaful* globally. The ethical structure of *takaful* serves as an offshoot of the principles of fairness and the sharing of each other's burden. This will extend protection to the less fortunate members of the community.

CONVENTIONAL INSURANCE

Conventional insurance can be defined as an agreement whereby an insurer undertakes (in return for the agreed premium) to pay a policyholder an amount of money (or its equivalent) on the occurrence of a specified event. The specified event must have some element of uncertainty about it. The uncertainty may either lie in the fact that although the event is bound to happen in the ordinary course of nature, the timing of its occurrence is uncertain; or the fact that the occurrence of the event depends upon accidental causes, and the event, therefore, may never happen at all (Anwar, 2008). Modern conventional insurance contracts are unacceptable to Islam. Life insurance involves the use of certain elements that directly contradict the rules of Shari'ah. They are: al-maisir-this is also known as gambling; gharar-also known as uncertainty; and ribaknown as "interest", and can be defined as making money on money. Most conventional insurers invest in interest-bearing assets. *Takaful* is restricted to an interest-free system. A *takaful* entity must ensure that both its policyholder and shareholder funds are invested in assets which do not have *riba* and that any bank with which the *takaful* entity has dealings should not be involved in the practice of *riba* (Anwar, 2008).

Kahn describes the difference between *takaful* and the conventional Western model of insurance graphically as shown in Figure 1. In Figure 1, Khan (2008) describes the difference between takaful and the conventional western model graphically.

The fundamental principle of the Islamic economic system is an equitable distribution of wealth. *Takaful* is a system where people are encouraged to contribute money for mutual help in times of need. The Islamic economic system combats the accumulation of wealth and its concentration in the hands of a small minority. The Islamic law of inheritance provides for the shifting and distribution of wealth. It divides the estate of the deceased over a wide range of beneficiaries, without benefiting a single heir to the exclusion of all others. The nominee in a family *takaful* scheme is only a trustee and the policy money needs to be distributed to all the heirs (Ali, 1954).

With the *takaful* scheme, financial responsibilities are shared to assist each other. It provides mutual financial aid and assistance to those who are members of the *takaful* scheme. It has its origin in the concept of collective sharing of an individual's loss.

Takaful is being practiced now as an alternative to the conventional insurance system. This is an Islamic way of mutual assistance to deal with uncertainties of life.

it from conventional insurance. If one were to adulterate this spirit underpinning takaful and treat it as a pure

ORIGIN OF TAKAFUL

The concept of *takaful*, or Islamic insurance, has been familiar for centuries and was practiced by the Muhajirin of Mecca (http://en.wikipedia.org/wiki/Muhajirun) and the Ansar of Medina (http://en.wikipedia.org/wiki/Ansar), following the Hijra of the Prophet Muhammad over 1400 years ago (Anwar, 2008).

Takaful derived from the *'aqilah* and *diyah* systems, whereby people of a given tribe would come to the financial rescue of one of its members should he face an unexpected liability, such as paying for blood money (*diyah*) (Manjoo, 2007).

MEANING OF TAKAFUL

Takaful is an Arabic word stemming from the verb "kafal", which means to take care of one another's needs or "guaranteeing each other" (Stagg-Macey, 2007). According to this scheme, the members or participants in a group jointly agree to guarantee themselves against loss or damage. The entire group would assist the incumbent person to indemnify his loss and to provide him with financial help. Takaful is a legally binding agreement between all the participants of the scheme to pay any of its members who suffer a loss as specified in the takaful policy document. According to Catherine it is an Islamic system of mutual insurance built around the concept of donation (Stagg-Macey, 2007). The takaful scheme has evolved from the teachings of Islam, on the basis of the Qur'an and the Sunnah. The Holy Qur'an says:

"Help ye one another in righteousness and piety, but help ye not one another in sin and rancour (Ali, 1954, 2008) (Holy Qur'an)".

Takaful literally means "mutual guarantee" or "guaranteeing each other" (Anwar, 2008). Under *takaful*, resources are pooled to pay for events/losses that individually none of the members of the pool could afford. For example, a group of people collectively use their combined money to pay for events and large expenses such as births or marriages, or if a financial loss occurs to a member of the group. It is a form of mutual insurance and is not dissimilar to the mutual cooperative schemes that exist in Europe and the United States (Anwar, 2008).

Takaful is based on the concept of mutual cooperation, where the insured is also the insurer and therefore shares in the profit or loss of the institution to which they are paying (the contribution) (Anwar, 2008). *Takaful* exists primarily to spread a risk and to alleviate a financial loss suffered by somebody. Unfortunately, in our contemporary commercial ethos this benevolence has become meaningless. The elements of philanthropy and benevolence should be reflected in *takaful* to differentiate pure regulated and standardised commercial venture, the *Shari'ah* spirit may be dishonoured (Manjoo, 2007).

There must be cooperative principles in *takaful*, but there need not necessarily be Islamic principles in conventional mutual or cooperative insurance (Stagg-Macey, 2007).

For any legal system to survive, especially in an era of globalisation and universalism, one should allow *takaful* to evolve. This proves the versatility of Islamic law.

EVOLVEMENT OR DEVELOPMENT OF TAKAFUL

In modern-day contexts, the first takaful company - the Islamic Insurance Company of Sudan - was founded in Sudan by the Faisal Islamic Bank in January, 1979 (Anwar, 2008). The Bank's Shari'ah Supervisory Board approved this endeavour, and in January 1979, the Islamic Insurance Company was established as a public company (under the Companies Act, 1925). In Malaysia, the Islamic Insurance Company was established as a private limited company. The Malaysian government took steps to form a special body known as a "Task Force" on the establishment of Islamic insurance in Malaysia. In its report to the government, the task force suggested that an Islamic insurance company should be established in Malaysia. The Malaysian government then promulgated legislation known as the Takaful Act, 1984, which regulates the Islamic insurance (takaful) of Malaysia (Ali, 2008).

In 1985, the Council of Islamic Scholars in Mecca approved *takaful* as a *Shari'ah*-approved alternative to the conventional insurance system. This led to mutual *takaful* companies being established in different Muslim countries, including Dubai, Bahrain, and Malaysia (Anwar, 2008).

In the Middle East, *takaful* has developed in Saudi Arabia, Bahrain, Iran, and Qatar, with new operations recently opening in Egypt, the United Arab Emirates, and Kuwait. Steps have also been taken in Europe and the US to establish similar companies. There are no doubt that there are tremendous opportunities for *takaful* in those Western countries harbouring large Muslim communities. As such, the potential for *takaful* is enormous.

Currently, Malaysia has the most mature *takaful* businesses operating alongside conventional banking and insurers (Anwar, 2008).

Modus operandi of takaful

Contributions are made into the risk pool. From this pool, direct and indirect expenses and claims are paid. If there is a surplus, it is shared amongst the participants. Deficits are also made up with additional contributions from participants or with an interest-free loan from the operator. *Takaful* generally means joint guarantee. It is an understanding among a group of people who agree to reciprocally guarantee each other financially should any event occur. The basic objective of a *takaful* contract is to pay from a common fund, which is set up by the participants of the scheme (Ali 2008).

The operation of *takaful* practices is supervised by an independent body called the *Shari'ah* Supervisory Board or Council. The establishment of a *Shari'ah* Supervisory Board is a prerequisite for the commencement of the *takaful* operation (Ali 2008).

Takaful has emerged as a profit-sharing business venture between the Operator and the individual members of a group of participants who desire to reciprocally guarantee each other against certain loss or damage that may be inflicted. Takaful contracts are based on the principles of mudarabah (limited partnerships), which means profit and loss sharing. Any surplus or deficit of the *takaful* operation has to be shared by the participants, or the members themselves. It means that when a *takaful* scheme is operated on a commercial basis, the surplus has to be shared between the operator and the participants in accordance with the principles of mudarabah. The concept of tabarru (donation) is also incorporated in a takaful life scheme. This means a participant will agree to relinquish a certain amount of takaful contributions to fulfil his obligation of mutual help and joint guarantee, should any of the fellow participants suffer a loss. (Ali 2008).

Advantages of takaful

Under takaful the up-front costs are minimized. Business can be transacted immediately. In this way, risk is capped and costs become predictable, whereas under the conventional system, the operator has to invest in software licences, hardware, and expensive IT skills. He may have to wait and hope for a number of years while the system is prepared for use. Additional advantages of takaful are the transparent charging of fees and commissions and how these features would assist a Shari'ah Board to decide if a takaful scheme is really operating in a fair, Shari'ah-compliant way in handling deductions from its participants' contributions. The ability to hold a separate tabarru fund for each class or subclass of business and the inherent ability to manage risk in real time is regarded as a big advantage (Ferguson, 2008).

The principles of fairness and sharing each other's burden will undoubtedly extend protection to the less fortunate members of the community. In the *takaful* model, surpluses can be use for *zakat* and funds can be channelled into projects which are for the common good, such as a new school or hospital. Based on the principles of fairness, transparency, simplicity and sharing the burden, *takaful* appeals to the very greatness of the Human Spirit (Ferguson, 2008). On the basis of this

ethical dimension, *takaful* will succeed, because it is bound to succeed (Ferguson, 2008). The *takaful* business has an explicit ethical structure which can be marketed to both Muslims and non-Muslims. The dramatic rise in the demand for *takaful* insurance can be attributed to this ethical nature of the product.

Takaful practices are free from the elements of *riba* and other prohibited elements and are evolved around the elements of *mudarabah*, *tabarru*, and other *Shari'ah*justified elements. Conventional insurance may involve *riba* and some other elements which may not be justified by *Shari'ah* principles (Anwar, 2008). Although both conventional and *takaful* businesses generate profits for the shareholders, in *takaful* business the expenses paid to the shareholders are explicitly transparent - in conventional insurance this is not necessarily the case (Anwar, 2008).

Uses of takaful

Typical uses of *takaful* are insuring property, vehicles, goods, valuables, health, accidents and life (Divanna, 2009). *Takaful* insurance is offered for a wide range of business and personal activities, such as engineering/construction, motor vehicle, property, marine general accident, liability, personal (mortgage, acci-care, credit shield, critical care and comprehensive care), and medical (Divanna, 2009).

Hitches/bottlenecks in *takaful* operations

Takaful products reveal themselves in emerging markets, and as such, they face challenges such as immature banking infrastructure and poor communications infrastructure. On top of this, there is little infrastructure for the new business. Many of the challenges facing *takaful* operators are strategic as this formative market tries to establish itself. Skills and resources can be borrowed from conventional insurance markets (Stagg-Macey, 2007).

As takaful originates from an Islamic concept, one of the greatest challenges facing the *takaful* industry is the misconception that it is exclusively for Muslims (Divanna, 2009). For example, in multi-racial Malaysia, takaful products have attracted even the non-Muslim communities, despite the obvious religious and cultural differences. Nonetheless, the interest shown by non-Muslims and the support of Muslims is not enough to promote the awareness and the growth of takaful and what it has to offer. It is this lack of awareness that presents one of the greatest challenges to the development and growth of the national and global industry (Ahmad, 2007).

Another stumbling block that has to be overcome is that the financial strength, stability, and standards of conventional insurers are established and known. These conventional insurers have been in the industry for many years and their service levels are more obvious than those of *takaful* operators. To overcome this problem a wider range of *takaful* products must be offered as an alternative to those offered in the conventional market. The needs of the lower income groups must also be addressed. Micro-*takaful*, a concept of providing affordable cover to the poor, comes to mind (Ahmad, 2007).

End purpose of takaful

Modern *takaful* practice is similar to insurance in practice whereby the contribution amount is calculated and is fixed for a standard normal person at a certain age for a certain amount of benefit. Through participation in *takaful* schemes, participants are given the chance to assist one another. The *takaful* operator is required to accumulate as much *tabarru* funds as possible to help those in need (Daud, 2009).

When somebody enters into a *takaful* scheme, he is not supposed to have any intention of making money. His intention should be to share his wealth *via* contributing money or giving his money as *tabarru* towards a fund that is used to help somebody else who requires assistance. He should look beyond worldly rewards in the knowledge that when his time comes to face death, the *takaful* operator who manages the fund shall also ease the burden of his family in the same way as he acted towards others in similar circumstances. The goal is to please God and achieve prosperity in this life and the hereafter (Daud, 2009).

Conventional insurers make use of uncertainty and interest in their business practice. *Takaful* is viewed by Islamic scholars as the acceptable alternative - being guided by *Shari'ah* principles. The social relationships between the scheme members are also significant. Islam promotes cooperation and sharing (Willis, 2007).

ISLAMIC BANKING AND ISLAMIC INSURANCE

Insurance in modern trade and commerce provides safety for the people as security against accidents and calamities. Likewise, modern trade and commerce cannot be conceived without involvement of insurance and banking. The conventional systems of insurance and banking, which are based on interest, cannot be adopted by Muslims as a *Shari'ah*-compatible system. There is an intrinsic relationship between Islamic banking and Islamic insurance. The progress of Islamic insurance depends on a healthy growth of Islamic banking.

Islamic banks have already attained considerable success in the banking sector. It is only the beginning of

takaful and it is likely to flourish in the insurance sector. To attain the desired level by both the Islamic bank and Islamic insurance, a strong relationship needs to be built up between the Islamic bank and Islamic insurance throughout the world (Ali, 11).

Banking and insurance without interest is feasible, viable, competitive, and sustainable in the face of competition from the conventional interest-based system.

The current century is going to be the century of Islamic banking and insurance for the benefit of the people at large, coupled with equity and justice for all. *Takaful*, like Islamic banking, has become a viable reality. *Takaful* is a financially viable and competitive alternative insurance for Muslim countries. Islamic banking cannot be fully *Shari'ah*-based unless there are *takafuls* to take their insurance business (Ali, 12).

Customers now have the choice between typical as well as Islamic insurance products. Similarity of functions between the insurance and *takaful* products cannot be denied and should be expected, given that the concept of mutually helping each other, which is found in insurance, is also a concept applauded by Islam. However, from the conceptual and operational perspective, many differences were noted between takaful and insurance, due mainly to elements found in an insurance contract which are prohibited in any Islamic transactions, such as interest (riba), uncertainty (gharar), and gaming (maysir). Hence, takaful products are designed to function as any typical insurance product, but operated differently, to avoid the prohibitive elements.

TAKAFUL AND THE GLOBAL MARKET

Takaful is the fastest-growing area of the world insurance market. It is growing at 20 to 25% per annum, compared to the world average growth of conventional insurance at 5 to 5% per annum. The validity of this growth was made possible in the demand and the prospects of potential rewards both for the customers and entrepreneurs of Islamic insurance. In a market place, the attraction of takaful business may be ascribed to its connection with the Islamic Shari'ah as well as its being a better and more just system. This aspect should be attractive to everyone, irrespective of any religious basis upon which the system stands. Takaful business has an explicit ethical structure which can be marketed to both Muslims and non-Muslims. The dramatic rise in the demand for takaful insurance is due to this ethical nature of the product. It bears stressing once more, as has been done repeatedly throughout these pages, that on the basis of its ethical foundation, takaful ought to be attractive to both Muslims and non-Muslims. The takaful industry is, however, small in comparison to its conventional insurance counterpart. This market, therefore, needs to gain worldwide brand recognition. This is what this paper aims to do.

The main difference between *takaful* and conventional insurance

The customers (policyholders) of the *takaful* business agree to pool their contributions and share the liability of each policyholder. So if one policyholder has to pay a claim, it is paid out of the combined pool of the policyholder's contributions. This eliminates the principle of *gharar* (uncertainty) which is not allowed within Islam (Anwar, 2008).

As with mutual insurance, the policyholders share in the profit and loss of the *takaful* business - that is, the policyholders all share the insurance risk. They do not give the risk to the *takaful* company (as it occurs in a conventional shareholder insurance company). Consequently, if at the end of a financial year, the *takaful* business makes a surplus, this is shared between the *takaful* policyholders (Anwar, 2008).

The assets of the *takaful* business have to be invested in *Shari'ah*-compliant assets. For example, investments cannot be made in gambling institutions, businesses that make alcohol, businesses that sell weapons or assets that pay interest (*riba*) (Anwar, 2008).

The operators of the business are paid explicit fees for setting up and running the company on behalf of the policyholder. These fees should cover all the setting up costs, running costs and profit-loading of the shareholders, and are the only way that the shareholders are remunerated. After the fees are deducted, any surplus arising from the *takaful* business is shared amongst the policyholders only. These explicit fees are in the *takaful* contract, which each policyholder signs with the *takaful* company, and are fully transparent (Anwar, 2008).

The structure of *takaful* companies on profit basis is totally different from conventional commercial insurers. The central idea for all Islamic insurance models is the segregation between participants and shareholders' funds as the company role is only to manage participants' funds on their behalf. Any *takaful* company is usually called a "*takaful* operator" instead of an insurer. For the Islamic model, contributions (premiums) should be paid on donation (*tabarru*) in order to remove the element of *gharar* from the *takaful* contract. These two principles are considered essential elements from the *Shari'ah* point of view, and all Islamic models have to comply with these principles (Tolefat, 2006).

Takaful practices are free from the elements of *riba* and other prohibited elements and are evolved around the elements of *mudarabah*, *tabarru*, and other *Shariah*justified elements. Conventional insurance may involve *riba* and some other elements, which may not be justified by *Shari'ah* principles. In *Takaful*, the paid premium is treated as both donation (*tabarru'*) and saving (*mudarabah*). In the conventional system, the paid premiums create an obligation against the insurer on a sale and purchase relation. The underwriting profit in

Takaful is distributed to the policyholders. The shareholders' profit is generated from the return in the investments of the shareholder capital and expenses paid to the shareholder by the policyholders for (i) managing the company on behalf of the policyholders, and (ii) managing the policyholders' investment funds on behalf of the policyholders. In the conventional scheme, the policyholders do not get any share of the underwriting profit (except in mutual companies); shareholders' profit is generated from the company's underwriting profit plus any investment returns. Under takaful, the policyholder's funds belong to the policyholders on collective basis and are managed by the shareholders. Under the conventional scheme, all funds belong to the company, though separation of assets may be maintained between shareholders and policyholders for specific insurances (for example, with profits) (Anwar, 2008).

CONCLUSION

One of the greatest challenges - the misconception that takaful is for Muslims only - has been settled in this paper. Due to its explicit ethical structure, takaful can be marketed for both Muslims and non-Muslims. In multiracial Malaysia, for example, takaful products have attracted even the non-Muslim communities. The belief that takaful is only for Muslims has hopefully been refuted. This is, however, not enough to cultivate a culture of awareness for *takaful* products. Although takaful products are faced with challenges such as immature banking infrastructure, awareness can be cultivated by offering a wider range of *takaful* products as an alternative to those offered in the conventional market. The strength of *takaful* products to announce their awareness lies in its ethical structure. The ethical structure of *takaful* serves as an offshoot of the principles of fairness and the sharing of each other's burden. This will extend protection to the less fortunate members of the community. On the basis of this common humanity, takaful products stand a chance to be accepted by both Muslims and non-Muslims, despite the obvious religious and cultural differences. It seems probable that takaful companies will attract new clients from the existing conventional insurance franchises. Takaful is being practiced now as an alternative to the conventional insurance system.

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Modernising Insurance Solvency Regimes— Key Features of Selected Markets

A STUDY BY THE GENEVA ASSOCIATION

AUGUST 2016

The Geneva Association

The Geneva Association is the leading international insurance think tank for strategically important insurance and risk management issues.

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Established in 1973, The Geneva Association, officially the 'International Association for the Study of Insurance Economics', has offices in Zurich, Switzerland and is a non-profit organisation funded by its Members.



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The primary goal of any insurance solvency regime is to secure the interests of policyholders. One of the key elements to this end is the requirement for insurers to hold capital in order to be able to honour all future payouts to policyholders, also in case that unexpected claim events occur.

Historically, insurance solvency regimes have been specific to local jurisdictions. However, alongside the internationalisation and integration of economies and financial services, including the insurance industry, the marketplace is becoming increasingly global. This raises the issue of how to effectively regulate and supervise insurance activities at local, regional and global levels.

Also, advances in product development, technology and risk management techniques over the latest decades put pressure on regulators to develop solvency regimes to embrace new risks, new products and even supervisory skills.

The International Association of Insurance Supervisors (IAIS) is currently developing its global Insurance Capital Standard (ICS) as part of Its Common Framework for the Supervision of Internationally Active Insurance Groups (ComFrame). This report aims to shed light on key features of solvency regimes in selected jurisdictions and compares new and emerging regimes with more established ones.

The report also provides an overview of commonalities and differences—based on a structured questionnaire—across regimes and looks, amongst others, at the way assets and liabilities are valued, how regulatory capital requirements are set, whether or not internal models are allowed, and criteria for assessing capital resources, etc.

Our study demonstrates that there is much common ground with regard to the main objectives and key elements of existing and developing solvency regimes. It is, however, clear that these common elements are interpreted and applied in different ways. The IAIS will have to take into account these differences as they strive towards the goal to introduce the ICS.

Anna Maria D'Hulster Secretary General The Geneva Association

2. Introduction

Insurance regulatory and supervisory regimes aim at the protection of policyholders and supporting financial stability. The regulatory criteria and requirements set for different markets by the responsible regulatory authorities in pursuit of these objectives are similar in structure—but not identical.

On 1 July 2012, the International Association of Insurance Supervisors (IAIS) presented a comprehensive version of the envisaged common framework (ComFrame). ComFrame is a set of international supervisory requirements focusing on the effective group-wide supervision of internationally active insurance groups (IAIGs). As a component of Com-Frame, the IAIS is developing a risk-based global insurance capital standard (ICS), on which a consultation paper was published in October 2013, followed by field testing and additional consultation phases. A second consultation paper was released in July 2016 with a consultation period of three months, i.e. until mid-October.

Confidential reporting of results based on ICS Version 1.0 is scheduled to begin in 2017. The IAIS is targeting the adoption of ComFrame, including ICS Version 2.0, by the end of this decade.

Like other global standard setting bodies, the IAIS does not have legal authority to prescribe or enforce its standards, including the ICS, upon any jurisdiction or firm.

The current discussion on the ICS encouraged The Geneva Association to prepare a comparative study of insurance solvency regimes—most of them recently modernized along selected element characteristics which are deemed to form essential features of insurance solvency regimes. Based on a questionnaire, The Geneva Association conducted a survey with contributions from eleven insurance groups and eight supervisory bodies with a focus on the following states/unions of states: Australia, Brazil, Canada, China, the European Union, Japan, Mexico, Singapore, South Africa, Switzerland and the United States.

The study does not benchmark the developing ICS against the elements chosen for review of the solvency regimes in the above noted jurisdictions because at this early stage of development of the ICS still too many options are being explored through field testing and consultation. The Geneva Association does not through this study aim to take positions on the preferred approach for the ICS. This said, The Geneva Association is sustaining its engagement in the discussion and consultation on the ICS in order to promote an outcome which will establish comparable results across jurisdictions, will respect the need for a level playing field, will not create unintended consequences for insurance markets and consumers nor place unnecessary burdens on the insurance industry.

Hence, the main purpose of this study is to provide an overview of current practices, approaches and methods, focusing on selected elements such as valuation principles, risk sensitivity, risk-based capital and internal models. This study, limited to the selected countries and elements, gives insights and information on the regulatory regime in several countries that have already adopted a risk-based solvency capital approach or are in the process of doing so. It helps to better understand the issues at stake in the current ICS discussion at the IAIS, and thus contributes to its development as well as to the relevant debate.

3. Key Findings

Regulatory capital requirements in the countries concerned are risk-based or developing into being more riskbased over time. Being risk-based means that the solvency regimes aim to reflect all risks with the potential to affect the balance sheet of the insurer. Specific risks such as strategic and reputational risks are generally not accounted for in the capital calculation. As a general conclusion, the regimes examined are characterised by a strengthening over time of the degree of risk sensitivity in regulatory capital requirements.

Other findings are summarised as follows:

- Assets are valued in many regimes according to principles which are compatible with International Financial Reporting Standards (IFRS)/Generally Accepted Accounting Principles (GAAP) or according to local statutory accounting rules so prescribed.¹ Particular adjustments for intangible assets, goodwill and deferred tax for solvency capital calculation purposes are required in some countries.
- Liability valuation is heterogeneous across jurisdictions with regards to, for example, underlying assumptions, applied rules and adequacy tests as well as whether valuation reflects the degree of illiquidity of the liabilities. Valuation in many jurisdictions is based on cash flow projections, discounted by a risk-free rate, with or without an adjustment for credit spread/liability illiquidity. Further, a margin over current estimate is, in many cases, added to the current estimate, whilst explicit countercyclical elements that reflect the degree of illiquidity of the liabilities are rarely considered. Other jurisdictions prescribe conservatism over and above expected obligations and subject companies to annual reserve adequacy assessments.
- **Capital requirements** are in most cases, but not always, set at a predetermined confidence level. It is not common to take account of future management actions in determining the solvency requirements. Capital requirements are specified at 'solo entity level', i.e. for individual insurance companies. Capital requirements at group level (for all entities belonging to a group) do not exist in all the countries examined.
- In general, insurance solvency regimes contain provisions for a 'ladder of intervention' approach that provides the relevant supervisor with the requisite supervisory tools to intervene in different degrees of intensity connected to the solvency situation of the supervised company/entity and remediate deficiencies

as necessary. In some instances, intervention triggers may also be part of the regime. Should intervention be necessary the supervisor can adapt the tools to align with the degree of the severity of the problem. This allows the company to anticipate supervisory actions and can contribute to an orderly means to address the issues raised by the supervisor.

- The use of *internal models* as part of the regulatory capital requirement calculation is subject to specific regulatory criteria and can be applied only upon supervisory approval. The actual use of and reliance on full or partial internal models is high for certain businesses, as in the case of reinsurance, or for certain jurisdictions, as in the case of Switzerland, but on average it is more limited.
- The quality of *capital resources* is assessed based upon specific criteria, applying a subdivision into two or three tiers. The capital classification is generally based on loss absorbency, where Tier 1 is the most and Tier 3 the least loss-absorbent.
- Qualitative requirements are imposed in all regimes, mostly regarding governance (especially risk management and internal control).
- An Own Risk and Solvency Assessment (ORSA) is imposed in a large number of the countries examined. Where it is not required yet, the introduction of an ORSA-type requirement is planned.

¹ The U.S. uses statutory accounting principles (SAP).

4. Choice of Jurisdictions and Methodology
G\

This study represents an analysis of selected elements of solvency regimes from countries representing various geographical areas. The countries were chosen to obtain a broad, geographically repesentative sampling of countries that have already adopted a risk-based solvency capital approach or are in the process of doing so. They include Australia, Brazil, Canada, China, the European Union, Japan, Mexico, Singapore, South Africa, Switzerland and the United States.² The elements were chosen based on the advice of industry and regulatory experts with the aim of supporting the study's main focus, that is, to look at key issues of solvency regimes which are being modernised in a number of emerging markets.

The Geneva Association developed a questionnaire (see Annex 2: Survey Questionnaire) addressed to one company representative and one supervisory representative in each jurisdiction covered by the study. The questionnaire addressed the following areas: valuation principles, risk sensitivity, calibration, qualitative requirements, group issues, internal models, multi-layer supervisory systems and qualifying capital. The questions asked are relatively broad, aimed at making meaningful, general comparisons possible. Hence, this study does not aim to cover all details of these selected elements, and the comparisons made must be seen in this light.

Unless explicitly stated, the findings in this study are based solely on the replies obtained to the questionnaire developed by The Geneva Association, in certain cases further adapted on the basis of contacts taken with the respondents to clarify some details. This approach does limit the range of possible analysis and comparisons. As a consequence, the conclusions drawn are in line with the overall objective of the study, which is to spur high-level discussions on the development of the ICS.

² A reply to the questionnaire was not obtained from the Chinese market. Hence, the information provided on the Chinese market in this study has been obtained from other sources.

5. Background Information on the Solvency Regimes Included in the Study

The following general information on the subject of jurisdictions gives a short overview of the existing regimes and planned changes.

EUROPE

- In the European Union (EU), the Solvency II (SII) regime, based on a three-pillar supervisory structure, entered into force on 1 January 2016 for insurance companies in all EU (and European Economic Area) member countries. Insurance companies affected by Solvency II have, however, been preparing for the new regime for many years; hence, the actual introduction of the principles is a process which has been long under way. Whilst the requirements set by the Solvency II Framework Directive had to be transposed into national law, the implementing measures came directly into force. The technical standards prepared by the European Insurance and Occupational Pensions Authority (EIOPA) come into force after their approval by the European Commission. Additional guidelines that are binding on a 'comply or explain' basis for national competent authorities without further approval are issued by EIOPA. Although such guidelines are addressed to national competent authorities, they do, in effect, set requirements for insurance companies to follow.
- Solvency II comprises quantitative requirements regarding risk-based capital (Pillar 1), supplemented by qualitative requirements concerning governance and the supervisory review process (Pillar 2) and requirements concerning public disclosure and supervisory reporting (Pillar 3).
- Switzerland's Financial Market Supervisory Authority (FINMA) is mandated to supervise banks, insurance companies, exchanges, securities dealers, collective investment schemes and their asset managers, and fund management companies. FINMA uses a principles-based, risk-oriented approach to its supervision of insurance companies. The intensity of supervision is proportionate to the risk potential of an insurance company. The Swiss Solvency Test (SST) has been developed since 2003, and the legislation entered into force in 2006 with a transitional period of five years. The SST is a risk-based system relying on a market-consistent total balance sheet. Since 2007/2008, insurance companies and groups need to submit a comprehensive SST report to FINMA. Since 2011, SST can be used by FINMA directly to enforce supervisory action based on a ladder of intervention. In 2015, the

legal basis for the SST was strengthened and revised. The European Union (Parliament, Commission and Council) have classified SST as fully equivalent to Solvency II. The SST is the only regulatory system that has been granted equivalency from the beginning of Solvency II.

NORTH AMERICA (United States and Canada)

- In the United States (U.S.), the National Association of Insurance Commissioners (NAIC) is the national standard-setting organisation created and governed by the chief insurance regulators from the 50 states, the District of Columbia, and five U.S. territories. It coordinates the work of the state insurance regulators that are responsible for insurance supervision, provides regulatory support to state insurance departments, and coordinates changes to insurance regulatory requirements. Over the past years, the NAIC has, as part of the Solvency Modernization Initiative (SMI) introduced reforms related to group supervision, corporate governance, enterprise risk management, liability valuation for life and annuity products (principle-based reserving) and reinsurance. In addition, as a result of the Dodd–Frank Act, the Federal Reserve has obtained supervisory powers concerning insurers that have been designated as systemically important.
- Canada's Office of the Superintendent of Financial Institutions (OSFI) develops the solvency requirements for federally registered Canadian insurance companies. In recent years, the guideline on risk management was updated, requiring an enterprise-wide framework and introducing an ORSA requirement in 2014.

LATIN AMERICA (Brazil, Mexico)³

- SUSEP (Superintendência de Seguros Privados—National Regulatory Agency for Private Insurance) is responsible for the supervision of all insurance and reinsurance undertakings in *Brazil* (excluding health insurance)⁴ and is working on the development of a risk-based solvency regime to be fully implemented by the end of 2017.
- In *Mexico*, a new regulatory framework has been developed by the Mexican regulator, Comisión Nacional

³ For an overview, see Ernst & Young (2014).

⁴ The ANS (Agência Nacional de Saúde Suplementar) is responsible for health insurance.

de Seguros y Fianzas (CNSF) in cooperation with the Mexican association of insurance companies, aiming at a more sophisticated risk-based capital approach than is currently the case. Approved by the Mexican Congress in April 2013, the regulation with certain quantitative and disclosure requirements will become effective in 2016.

ASIA-PACIFIC (Australia, China, Japan, Singapore)

- In Australia, the Australian Prudential Regulation Authority (APRA) is the supervisory authority in charge of prudential regulation of financial institutions. In January 2013, APRA updated its capital adequacy requirements and implemented the Life and General Insurance Capital Standards (LAGIC), a risk-based solvency capital regime following a three-pillar approach.⁵
- In 2012, The *China* Insurance Regulatory Commission (CIRC) began an initiative to modernise its solvency requirements and built the so-called China Risk Oriented Solvency System (C-ROSS). C-ROSS is a risk-based solvency regime following a three-pillar approach.⁶
- The regulator in *Japan*, the Financial Services Agency (FSA), announced an updated financial monitoring policy for financial institutions in 2014. The policy comprises requirements for improving risk management, policyholder protection, claims payment and governance in insurance companies. Further developments of the regulatory framework focus on supervision, capital adequacy and the introduction of an economic value-based solvency regime.
- In *Singapore*, the RBC framework for insurers was introduced in 2004 by the supervisor, the Monetary Authority of Singapore (MAS). Supported by an industry consultation process in 2012, MAS reviewed the framework and, in 2014, issued details of the new risk based capital regulatory calculations called RBC 2. The final industry consultation is expected for Q2 2016 with potential implementation in 2019.

AFRICA (South Africa)

The South African Reserve Bank (SARB) has the responsibility for the prudential regulation of banks and the Financial Services Board (FSB) for the prudential regulation of insurers. In future, post the enactment of the Financial Sector Regulation Bill, the Prudential Authority, under the auspices of the SARB, will be responsible for the prudential regulation of both banks and insurers.

For the insurance industry, the major change in regulation comes with the implementation of the Solvency Assessment and Management (SAM) framework as of 2017. SAM is a risk-based solvency regime that follows a three-pillar approach. It will be legally introduced through enactment of the Insurance Bill, expected to take effect in 2017.

⁵ http://www.apra.gov.au/Policy/Documents/Regulation-Impact-Statement-LAGIC.pdf.

⁶ The information on China provided in the study was obtained from other sources than via the questionnaire.

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6.1. REGIME OVERVIEW

The overview in *Table 1* of the regimes covered by this study shows that there are quite a number of similarities between the jurisdictions treated regarding the applied framework, valuation principles and accounting standards, risk-based capital requirements, possible use of internal models, and qualitative requirements such as an ORSA process. Despite such similarities, however, when applying and interpreting principles, differences in detail appear, as the analysis and comparison of specific elements in the following sections show.

Table 1: Overview of solvency regimes covered by this study

	AUSTRALIA	BRAZIL	CANADA	CHINA	EUROPEAN UNION
SUPERVISOR	APRA/ASIC	SUSEP/ANS	OSFI	CIRC	NCA ⁷
REGULATION	LAGIC	Insurance regulatory framework	Insurance regulatory framework	C-ROSS	Solvency II
STRUCTURE	3 pillars	3 pillars	3 pillars	3 pillars	3 pillars
YEAR OF MAJOR CHANGES TO REGULATION	2013 ⁸	2016 ⁹	2014	2016	2016
REGULATORY CAPITAL REQUIREMENT	Risk-based	Risk-based	Risk-based	Risk-based	Risk-based
ASSET VALUATION	IFRS-based	IFRS-based	IFRS-based	IFRS-based	IFRS-based
LIABILITY VALUATION	DCF ¹⁰	DCF (LAT test)	DCF	DCF	Market consistent value ¹¹
CONFIDENCE LEVEL / PERIOD	99.5% / 1 year	Varies (always above 95%) / 1 year	99% / 1 year (TailVaR)	99.5% / 1 year	99.5% / 1 year
RISK METRIC	VaR	VaR	TailVaR ¹²	VaR	VaR
INTERNAL MODELS	Allowed	Allowed	Partially allowed	n/a	Allowed
# OF CAPITAL TIERS	2	Limitations similar to Solvency II tiers	2	2	3
QUALITATIVE REQUIREMENTS	Pillar 2	Pillar 2	Yes	Pillar 2	Pillar 2
OWN RISK AND SOLVENCY ASSESSMENT	ICAAP	Planned	ORSA	SARMRA	ORSA

7 National competent authorities are responsible for insurance supervision, whilst EIOPA has a coordinating role, drafting technical standards for adoption by the EU Commission and developing guidelines which apply on a comply or explain basis.

- 8 New standards CPS 220 'Risk Management' and CPS 510 'Governance' became effective on 1 January 2015.
- SUSEP started implementing the Insurance Regulatory Framework step by step from late 2008. In 2015, the Brazilian regime obtained equivalence to Solvency II, with regard to the solvency assessment.
 Discounted cash flow.
- 11 In the EU—under Solvency II—the discounting of liabilities involves a number of explicit measures to address excessive short-term volatility and pro-cyclical behaviour as part of the market-consistent framework.
- 12 Tail value-at-risk (TailVaR or TVaR) is a statistical measure which provides the average of a specified 'tail' of the distribution, i.e. the portion of a distribution that lies beyond a certain confidence level. For instance, 95 per cent TVaR is the average of the tail of the distribution that lies beyond the 95th percentile. In comparison to value-at-risk measures, which provide the percentile value of a distribution (i.e. the value of a single point in the distribution), TVaR provides information about the shape of the tail of a distribution beyond the specified percentile. TVaR is also known as conditional tail expectation (CTE) and conditional tail value at risk in certain regimes. Hereafter, we will use the term TVaR for consistency when referring to tail value-at-risk measures in this paper, regardless of the official term used within a given regime.

JAPAN	MEXICO	SINGAPORE	SOUTH AFRICA	SWITZERLAND	UNITED STATES
FSA	CNSF	MAS	FSB/SARB	FINMA	Insurance Commis- sioners / Federal Reserve ¹³
Insurance Business Act	Insurance regulatory framework	RBC 2	Insurance Bill and Standards to be made thereunder ¹⁴	Insurance Supervision Act	Insurance regulatory framework
Chapters	3 pillars	RBC 2 Standards	3 pillars	SST plus Pillar 2 and 3 requirements	7 core principles
2014	2016	2019 ¹⁵	2017	2006	2016
Risk-based	Risk-based	Risk-based	Risk-based	Risk-based	Risk-based
Japanese GAAP	IFRS-compatible	IFRS-based	IFRS-based	Market (consistent) value	U.S. SAP ¹⁶
DCF (planned)	DCF	DCF	DCF	Market consistent value	U.S. SAP
% depends on risk category / 1 year	99.5% / 1 year	99.5% / 1 year	99.5% / 1 year	99% / 1 years (TailVaR)	n/a
VaR	VaR	VaR	VaR	TailVar	Various metrics exist
Partially allowed	Allowed	Allowed	Allowed	Allowed	Partially allowed
No tiers—core solvency margin	3	3	3	2	n/a
No	Pillar 2	Pillar 2	Pillar 2	Yes	Yes
ORSA	ARSI	ORSA	ORSA	ORSA	ORSA

¹³ The Federal Reserve is the consolidated supervisor of those insurance entities subject to its supervision (based on provisions under the Dodd–Frank Act). The brief responses in this table reflect responses describing the national system of state insurance supervision.

¹⁴ Still to be promulgated. Currently serving before Parliament.

¹⁵ Expected implementation date based on comments made by MAS.

¹⁶ SAP: statutory accounting principles

6.2. REGULATORY CAPITAL REQUIREMENT

EUROPE

The *European Union's* Solvency II framework is designed to be risk-sensitive and is based on a prospective (forward-looking) calculation to ensure accurate and timely intervention by supervisory authorities—the Solvency Capital Requirement (SCR) below which the amount of financial resources *should* not fall—and a minimum level of security—the minimum capital requirement (MCR) below which the amount of financial resources *must* not fall. Breaching the MCR ultimately results in withdrawal of the authorisation.

Furthermore, the SCR is risk-based, requiring an amount of solvency capital that reflects all quantifiable risks an insurer is exposed to. It can be calculated using a standard formula, or a full or partial internal model developed by the company and approved by the supervisory authority. Basically, a scenario approach is applied to capture the underlying risks and the links between assets, liabilities and risk mitigation. In some cases and subject to approval by the supervisory authority, the scenarios can be approximated by applying a factor-based approach, however, without reducing the confidence (calibration) level. In addition, not directly quantifiable risks such as reputational, strategic and liquidity risk are covered through a more qualitative assessment under Pillar 2. The SCR is calibrated to a 99.5 per cent confidence level, using a VaR measure over a one-year horizon. Solvency II fully supports reinsurance as a risk mitigation instrument. However, there are currently some practical limitations under the standard formula, due to some design insufficiencies.

In *Switzerland*, FINMA uses the Swiss Solvency Test (SST) as a supervisory tool, which adopts a risk-based approach using a total—no off-balance sheet items—and market-consistent balance sheet. The SST is designed to capture all material risk to this market-consistent balance sheet of the insurance company or group. It defines available capital resources and sets the required capital benchmark needed to pursue the business planned for the next 12 months. The required capital benchmark is the 1 per cent TailVaR of the change of capital resources over a one-year horizon at a 99 per cent confidence level.

As the SST is based on market-consistent values for all assets and liabilities, the impact of changes in

business or investment decisions by insurance companies is quantified at prevailing market conditions. The SST thus fosters conscious investment behaviour over the business and investment cycle by creating transparency on real market prices at any time, which in a market-consistent regime, is understood to disincentivise pro-cyclical (investment) behaviour.

Where necessary, the supervisor has the full, unrestricted set of intervention measures available by being able to induce any transaction at prevailing market conditions.

Insurance companies need to calculate their required capital benchmark appropriately. If needed, they must use an internal model, especially where the FINMA developed standard models (which are generally stochastic models, not formulas) do not sufficiently capture their risk situation.

Residual operational risk is not required to be quantified in the SST capital requirement; instead, operational risks are required to be mitigated. Despite this, for companies that calculate both, the SST ratio could sometimes be lower than the Solvency II ratio.

As part of the technical provisions, the SST provides for a cost of capital margin over the current estimate (MOCE), i.e. the cost to compensate investors for providing appropriate levels of capital resources during the entire run-off of the insurance liabilities.

NORTH AMERICA

- The United States' solvency regime uses a risk-based capital (RBC) approach, which is intended to be the basis for determining the point at which regulatory intervention is legally permissible and/or required rather than for internal company risk or capital management.¹⁷
- The U.S. RBC formula is primarily factor-based and considers all risks that are quantifiable and material for the industry, i.e. the *United States* framework typically covers all risks to some degree even if they are not explicitly reflected within the calculation of required capital. RBC is a laddered intervention framework that is designed to identify weakly capitalised companies and provide for increasing degree of supervisory intervention based on the company's RBC level.

¹⁷ For details, we refer the reader to the EU-U.S. Dialogue Project (2012, 2014).

- Strategic risk, reputational risk and currency risk, for instance, are not explicitly accounted for in the RBC. The factors of the formula are derived from historical industry-wide data, whilst internal models are used for interest rate and market risk only. In particular, the RBC requirements for variable annuities are based on TailVaR measures calculated using stochastic models (RBC C-3 Phase 2). Currently, the NAIC is developing a model-based catastrophe component for P&C insurance and a factor-based method for more explicitly reflecting operational risk in the RBC formula.
- The U.S. RBC requirement is not calibrated to an overarching confidence level or time horizon, i.e. the formula was not designed to produce a minimum level of aggregate RBC at an explicit level representing a certain statistical outcome. However, the components and factors of RBC, such as asset risk or the catastrophe risk charge, do have a statistical calibration base.
- The Dodd–Frank Act required the United States Federal Reserve Board (FRB) to apply consolidated supervision to firms designated as systemically important by the Financial Stability Oversight Council (FSOC) as well as those holding company systems with a bank or thrift included within their structure. The FRB has initiated the development of its capital regime for these firms.
- In January 2016, the National Association of Insurance Supervisors (NAIC) initiated a work stream to develop a group-wide capital calculation. The NAIC plans to complete this exercise by year end 2016.
- The RBC requirements in *Canada* reflect the quantifiable key risks an insurance company is exposed to. The calculation of RBC is performed via a scenario-based approach for insurance and interest rate risk, and a factor-based approach for credit, market and operational risks. The regulatory framework does not directly account for the following risks: credit spread risk, liquidity risk, legal risk, strategic risk and reputational risk.

Canadian RBC is calibrated over a one-year horizon, using TailVaR as a risk measure at a confidence level of 99 per cent.

LATIN AMERICA

 The solvency capital regime in *Brazil* stipulates specific capital requirements for underwriting, credit and operational risk. Market risk will be included by the end of 2016. The capital requirements for insurers are calculated by standard models established by the supervisor, applying a factor-based formula that is calibrated at a confidence level of above 95 per cent (one-year horizon). The supervisor monitors and re-performs the capital requirement calculation for every company on a monthly basis by using an internal system that accesses a set of information provided on a monthly basis by the insurers.¹⁸

In Mexico, the Insurance and Surety Institutions Law (LISF) introduced a new risk-based solvency regulatory capital framework that is being implemented step by step from 2015. In the following two years, the riskbased capital for an insurer is determined according to the standard formula software provided by the supervisor. Internal models can be applied after the transition period. Liquidity, reputational and strategic risks are not quantified in the standard formula

VaR is the risk measure for calibrating the Mexican RBC at a confidence level of 99.5 per cent over a one-year horizon.

ASIA-PACIFIC

In Australia, insurers are obliged to hold capital according to the Prudential Capital Requirement (PCR). The PCR comprises a set of capital amounts plus any supervisory adjustments for the individual insurer made by APRA. The regulatory capital requirement is obtained by using APRA's 'standard method' or, alternatively, by an approved internal model. The standard method for calculating the capital requirement uses scenario- and factor-based approaches and takes the following risks into account: insurance, insurance concentration, asset risk (including market and credit risk), asset concentration and operational risk.

The regulatory capital requirement is based on a '1-in-200-year event' (corresponding to a one-year 99.5 per cent VaR).

 China's C-ROSS includes insurance, market and credit risk as the major underlying risks faced by insurers in its quantitative capital requirements. Risks such as operational, reputational and strategic risks are included in Pillar 2. For determining the regulatory capital requirement under Pillar 1, a prescribed standard method is in use, supported by a solvency stress test. For life insurers, a scenario approach is under discussion, whilst for

¹⁸ The set of information is called the FIP (Formulário de Informações Periódicas—'Periodic Information Form').

non-lifeinsurers, the standard method will be factor-based. The conceptual framework adopted a VaR approach for the calculation of the quantitative capital requirements.¹⁹ The confidence level will be set based on China's current circumstances, with reference to an industry quantitative impact study (e.g. 99.5 per cent).

- **Japan** has implemented a risk-based solvency regime. The amount of required risk-based capital is calculated at individual and at group level, using a factor-based approach and a one-year VaR. The requirements are set to specific confidence levels for each risk category: A 95 per cent VaR is applied for general underwriting and investment related risks, 99 per cent for other underwriting risks such as general personal insurance (health, accident), 99.5 per cent for natural catastrophe risk from earthquakes and 98.7 per cent for natural catastrophe risk from flood and storm.
- Singapore links its capital requirements to insurance, market, credit and asset concentration risk taking into account asset and liability mismatching. New explicit risk charges for operational risk, credit spread risk and insurance catastrophe risk will be introduced under the revised framework, RBC 2. Currently, a factor-based approach to determine the total capital requirements which correspond to a VaR with a 99.5 per cent confidence level over a one-year period as well as usage of internal models in the future is being discussed. The MAS also requires insurers to perform a series of prescribed stress tests on an annual basis to determine the robustness of their capital positions.

AFRICA (South Africa)

 The new South African regime²⁰ will capture a number of quantifiable risks including market, life underwriting, non-life underwriting, credit and operational risks, whilst liquidity, reputational and strategic risks may not be considered in the calculations. These latter risks, and any other risk that the insurer believes is relevant, should be taken into consideration as part of the ORSA.

The standard formula to calculate the regulatory capital requirement is based on a modular, primarily scenario-based approach, even though a factor-based approach applies for some risks such as operational risk. The scenario calculations are particularly relevant for those risks where the interaction between assets and liabilities is important, such as all market risks apart from concentration risk, all life underwriting risks and non-life lapse risk. Calibration is done at a 99.5 per cent confidence level over one year, applying a VaR of the basic own funds over a one-year time horizon.

6.3. VALUATION

EUROPE

- Solvency II prescribes a solvency assessment in the European Union according to market-adjusted values and a so-called economic balance sheet. Assets and liabilities are to be reflected at the amount at which they could be exchanged between knowledgeable, willing parties in an arm's length transaction. The Solvency II implementing measures prescribe a hierarchy of valuation methodologies as follows: quoted market prices in active markets for the same assets or liabilities should be used when obtainable or, if no direct prices are available, quoted market prices in active markets for similar assets and liabilities with adjustments to reflect differences. Otherwise, insurers should use a mark-to-model valuation. In general, intangible assets and goodwill are mostly written off in the economic balance sheet on the asset side.
- Technical provisions should correspond to the amount an insurance or reinsurance undertaking would have to pay if it transferred its contractual rights and obligations immediately to another undertaking (transfer value). Technical provisions are valued on a market-consistent basis, comprising the sum of the best estimate and a margin over current estimate. Updated assumptions must be used. The best estimate represents the probability-weighted average of future cash flows discounted using a risk-free rate term structure.²¹ Furthermore, a matching adjustment or volatility adjustment may, under specific conditions, be added to the discount rate. These so-called countercyclical elements are intended to alleviate problems of excessive short-term volatility under the market-consistent valuation approach.
- In Switzerland the SST requires a total balance sheet with market-consistent values for all assets and liabilities without adjustments such as for matching assets or liquidity features of liabilities. To avoid deviations from market consistency, the balance sheet for SST purposes is separate from statutory, local or other GAAP

¹⁹ Van Hulle (2014).

²⁰ which is not law yet but will become law once the Insurance Bill has been promulgated.

²¹ EU–U.S. Dialogue Project (2012, 2014).

or IFRS accounting principles. The valuation principles are the same for life and non-life liabilities; up-to-date assumptions are required to determine contingent cash flows. The cash flows are valued by optimally risk reducing replication, giving rise to a best estimate, and by adding a cost of capital MOCE that covers the cost of holding capital for the residual risk during its entire runoff. Where payouts do not depend on market variables, the value of the replicating portfolio is the risk-free discounted expected cash flow. Therefore the valuation approach seamlessly extends risk-free discounting.

The SST in general only allows risk-free discounting without 'spread adjustment'. As the only exception to this, FINMA has the option to allow for risk-prone discounting for the existing book of business during a phase of exceptionally low interest rates; new business always needs to be discounted risk free. No risk-prone discounting is currently allowed (even though the Swiss franc yield curve is currently negative up to 24 years).

NORTH AMERICA

- In the United States, regulatory reporting is based on statutory accounting principles (SAP) as defined within the NAICs Accounting Practices and Procedures Manual, and to a lesser extent, state law. The NAICs Accounting Practices and Procedures Manual represents a comprehensive basis of accounting, which utilises a maintenance process that requires the NAIC to adopt, reject or adopt with modification every U.S. GAAP standard as it is completed.
- The largest asset on most U.S. insurer's balance sheets is its investment in bonds and other fixed-income investments. SAP utilises a valuation of such investments that consider the business model of the insurer. For non-life insurers, investment grade bonds are carried at amortised cost whilst non-investment grade bonds are carried at the lower of amortised cost and fair value. However, all bonds are subject to impairment requirements. For life insurers, only bonds of the lowest quality are carried at the lower of amortised cost and fair value. However, in addition to being subject to impairment requirements, life insurers are also required to establish an asset valuation reserve liability designed to serve as a cushion for potential credit losses.
- Life and health insurance liabilities are valued with significant prudence, according to SAP, The discount rate in SAP formula reserves is intended to represent a prudent estimate of the investment earnings of a typical

insurer's investment portfolio over a long time horizon. Statutory reserves for variable annuities are based on TailVaR measures calculated using stochastic models (Actuarial Guideline XLIII). In addition, life insurance reserves are subject to annual asset adequacy testing requirements, which are typically performed through cash-flow testing of assets and liabilities over the life of the insurance liabilities and may result in the establishment of additional actuarial reserves. Most non-life (property/casualty) liabilities are valued according to best estimates of liabilities and are largely consistent with U.S. GAAP. (For life and health liabilities, statutory reserves differ from U.S. GAAP reserves, and both generally differ from company best estimates.) For non-life insurance, discounting is not used, except for qualifying claims in certain defined lines of business (e.g. workers' compensation and certain long-term disability policies).

• **Canadian** GAAP is compatible with IFRS and, therefore, applies the related accounting rules for asset valuation. The Canadian Asset Liability Method (CALM) is used to define actuarial reserves. For calculating the required capital, the liability cash flows are based on best-estimate assumptions without additional margins and discounted by regulatory prescribed rates for interest rate and insurance risk.²²

LATIN AMERICA

- In *Brazil*, the recognition and measurement of financial assets and liabilities generally follows the local GAAP standards, prepared in accordance with IAS 39 ('Financial Instruments'). The valuation of other types of assets follows local GAAP standards that are in compliance with IFRS. On the liabilities side, companies have to perform the liability adequacy test (LAT), which is based on the concept of best estimate, considering market values, for the technical provisions. The LAT considers realistic assumptions and an interest rates curve released by the regulator, without adding a margin over current estimate or accounting for countercyclical elements.
- The Mexican solvency requirements are based on an economic valuation of the whole balance sheet. In particular, the new 2015 LISF introduces a requirement to use market values for asset valuation purposes. Institutions must classify their investments in the following three categories that are compatible with IFRS: securities to finance the operation, to be held to maturity or available for sale.

²² See OSFI (2015).

For liability valuation, the value of the technical provisions must correspond to its market value, i.e. to the amount another insurer would pay if all contractual rights and obligations of the insurance portfolio were transferred. In order to comply with this requirement, institutions must value technical provisions by using best estimate of liabilities methodologies (BEL), plus a margin over current estimate. The BEL must reflect the probability-weighted average of the expected present value of future cash flows, using the relevant risk-free interest rate term structure. Countercyclical elements are considered in the valuation approach.

ASIA-PACIFIC

 In Australia, valuation is based on the Australian Accounting Standard AASB1038, adjusted according to the Australian Prudential Rules. On the asset side, intangible assets and goodwill as well as assets in excess of specified asset concentration limits are written off. Further, deferred tax assets are written off unless there are offsetting deferred tax liabilities that could be realised in a close-down scenario.

Liabilities are calculated by discounting the best estimate with the risk-free yield curve that is based on government bonds. Margins for future adverse experiences are explicitly allowed. As an element to counter cyclicality, real interest rate shocks are specified in terms of a relative percentage shock to the risk-free yield curve, and equity shocks are specified in terms of an absolute shock to dividend yields.

- The valuation principles are specified in the section technical principles for Pillar 1 in the conceptual framework of **China's** C-ROSS: The principles utilise a consistent measurement for assets and liabilities of non-life and life insurance undertakings, minimising the mismatch between assets and liabilities. The actual risk profiles of assets and liabilities should be fully reflected and be based on accounting information.²³
- In Japan, assets and liabilities are measured according to the Japanese GAAP principles with some adjustments for the solvency assessment. For most of the assets, a fair value measurement applies, whilst liabilities for life business are measured based on locked-in assumptions combined with a future cash-flow analysis in order to verify whether accumulating additional reserves in addition to existing technical provisions

is required. Liabilities for non-life business are not discounted, except for long-term business. Generally, a current estimate for liability valuation is not used, and the discount rate, where applicable, is a statutory-defined, assumed interest rate based on Japanese government bond yields and a safety factor coefficient.

Singapore's valuation rules for assets such as debt securities, equity securities, land and buildings, loans, outstanding premium and agents' balances, reinsurance deposits and reinsurance recoverables are set out in the Insurance (Valuation and Capital) Regulations 2004. The valuation of other types of assets follows local GAAP standards that are in compliance with IFRS.

The liabilities for both life and non-life businesses are calculated based on the expected cash flows of the underlying policies, with appropriate provision for adverse deviation added to the expected current estimate. Discounting of cash-flow projections is used for life insurance (risk-free rate), whilst for general insurance, no discounting is employed.

As part of the RBC 2 review, it is intended to introduce a matching adjustment concept to reflect the illiquid nature of life liabilities. Such adjustment will be added to the risk-free rates for certain life businesses that meet the eligibility criteria.

AFRICA (South Africa)

Market consistency is the overriding principle used for the valuation of assets and liabilities. IFRS builds the accounting basis, explicitly set out in the SAM framework, and is mainly applied to assets and liabilities other than technical provisions.

Liability measurement is performed on a current estimate plus margin over current estimate approach:

- The current estimate is a probability-weighted discounted cash-flow calculation of all cash flows that are expected for the insurance contract, based on the best estimates of the insurer as at the valuation date.
- The margin over current estimate is a cost of capital calculation, based on the present value of the cost of capital that an insurer may need to hold for its non-hedgeable risks.

The applied risk-free discount rate is related to the South African Government Bond discount rate, which is computed

²³ The information was obtained at http://www.circ.gov.cn/web/site0/ tab4566/info3905736.htm.

by the prudential regulator (FSB) on a monthly basis and published on the FSB website.

6.4. INTERNAL MODELS

The possibility for companies to make use of a full or partial internal model is an important element of a jurisdiction's solvency framework.

In the *European Union*, the SCR needs to be calculated appropriately as the VaR of the basic own funds over a oneyear time horizon. The EU has developed a standard model that aims to yield appropriate result for the SCR for most insurance companies and conservative results for all other insurance companies. Where the standard model is inappropriate (especially if SCR values are much too high), the SCR must be computed by an internal model. An internal model is developed to overcome the shortcomings of the standard formula. The use of an internal model can be requested by the supervisor and by the insurer. The regulatory use of internal models requires supervisory approval. The approval process for an internal model comprises six tests and standards: use test, documentation standard, profit and loss attribution standard, calibration standard, statistical quality standard and validation standard. Particularly, internal models must fulfil specific and demanding requirements, including documentation and integration of the model in risk management and decision-making processes.

The solvency regimes in *Brazil, Mexico, China, Singapore, South Africa* and *Switzerland* follow a similar approach, allowing for the use of full or partial internal models, provided the models are approved by the supervisor. Within this analysis, it is not possible to compare the respective approval requirements in the various jurisdictions in detail. This might be an area of future research. In general, internal models are most relevant for large insurance companies, since the costs of developing, monitoring and getting internal models approved are substantial.

In certain cases where the underlying risks are not well captured by the standard model, the regulator may require the use of internal modelling.

Australia also allows the use of an internal model upon the approval of the supervisor.

In *Switzerland*, currently, a large segment of the market both in terms of the number of companies and the required capital benchmark uses internal models. FINMA aims to reduce the use of internal models going forward.

In the *European Union*, a few insurance companies—mainly all material reinsurers and most of the bigger insurance groups—currently have an approved full internal model.

In the **United States**, an 'internal model' is typically understood to be a quantitative requirement that employs a company-specific actuarial cash-flow projection and is contrasted with 'formula reserves' and factor-based capital charges, which are uniform for all companies. Thus, internal model application, using prescribed parameters and time horizons, is limited to specific products in the life RBC formula and will be utilised in the catastrophe risk module currently under development for P/C insurers.

For the (limited) cases where partial internal models are allowed for life insurance, these models do not require supervisory approval as regulatory minimum/floor scenarios persist.²⁴ However, the regulators review internal models as part of the ongoing solvency surveillance process. The model-based catastrophe component, on the other hand, would have to come from vendors approved by the supervisor.

Following a similar approach, *Canada's* supervisor only recognises internal models for variable annuities and segregated fund guarantees, whilst in *Japan*, the use of an internal model is allowed only for catastrophe and minimum guarantee risks under specific requirements set by the supervisor.

6.5. QUALITATIVE REQUIREMENTS

EUROPE

- Pillar 2 of the *European* Solvency II framework sets qualitative requirements:
 - for the system of governance including risk management, the prudent person principle, fit and proper requirements, identification of key people and key functions,
 - for outsourcing activities,
 - for the ORSA as well as for the supervisory review process.

Solvency II requires every insurance company to conduct an ORSA. To this end, the insurer must set up processes which enable it to properly identify and assess the risks in the short and long term.

²⁴ EU–U.S. Dialogue Project (2012, 2014).

 In Switzerland there are specific corporate governance and risk management requirements as well as public disclosure requirements, and ORSA is in force. The requirements are similar to Solvency II.

NORTH AMERICA

In the United States, the NAIC adopted the Corporate Governance Annual Disclosure Model Act in 2014, requiring insurers to disclose their corporate governance framework. The annual disclosure includes policies and practices of the insurer's board and significant committees, policies and practices of senior management, and oversight of critical risk areas.

ORSA is a new requirement for large insurers and insurance groups from 2015 (collectively the entities required to perform an ORSA make up over 90 per cent of the United States premium volume). The ORSA includes an internal assessment of the risks associated with the insurer's current and projected future business plan, and an assessment is required of the sufficiency of capital resources to support those risks in both the current and stressed environments. At a minimum, three major components are required: 1) a description of the insurer's risk management framework, 2) the insurer's assessment of risk exposure and 3) the group risk capital and prospective solvency assessment.

 The *Canadian* regime comprises an ORSA process which includes reporting forms and frequency requirements and sign-off requirements. A guideline issued in 2014 by the OSFI outlines key elements of the ORSA, such as comprehensive identification and assessment of risks, relating risk to capital, board oversight and senior management responsibility, monitoring and reporting, and internal controls and objective review.

LATIN AMERICA

 Brazil's regulator, SUSEP, has defined standards regarding requisites of internal control and governance. The enterprise risk management standard was published in 2015. Additionally, insurers are obliged to provide regular statistical data to SUSEP.

SUSEP is currently studying ORSA issues and plans to publish general ORSA guidelines in 2016, to be tested and further reviewed in 2017.

• In *Mexico*, the new regulatory framework also covers

qualitative requirements in Pillar 2. In general, the governance requirements include rules concerning control functions, outsourcing and compliance. Furthermore, companies must undertake an ORSA, which is intended to provide a multi-year overview of the company's risks in an integrated risk management approach, covering all relevant risks of the company.

ASIA-PACIFIC

 In Australia, insurers have to comply with a range of risk management requirements, comprising a documented risk management framework, a formal risk appetite statement, a reinsurance management strategy and an Internal Capital Adequacy Assessment Process (ICAAP).

An ICAAP Summary Statement must be included as part of the process. This describes and summarises capital assessment and management processes. An ICAAP summary report has to be prepared each year and this includes an assessment of the effectiveness of ICAAP.

- In *China*, the solvency-aligned risk management requirements and assessment (SARMRA) is one of CIRC's supervisory elements in Pillar 2 that has a strong focus on insurance companies' own solvency management. To this end, CIRC sets the minimum standards of risk management for insurers and periodically evaluates their governance structure, internal controls, management structure and processes. Additionally, insurance companies' risk management capability and risk profile are to be periodically assessed.
- In *Japan*, the FSA introduced a formal ORSA process in 2015. Other qualitative requirements are not formalised in the current solvency regime.
- **Singapore** has requirements on governance, internal control and on the supervisory review process.

Additionally, insurers are required to undertake a formal ORSA, at least annually. The ORSA should encompass all reasonable foreseeable and relevant material risks of the insurer and identify the relationship between the risks as well as the level and quality of financial resources needed.

AFRICA (South Africa)

The Solvency Assessment and Management in **South Africa** also includes board functions and composition, the risk

management system, strategy and policies, the internal control system, control functions and outsourcing.

Additionally, insurers will under SAM be required to undertake a formal ORSA, obliging them to take their own view (which may or may not be different from the regulatory view reflected in the regulatory capital requirement) of their risks, the amount of capital that they need to hold for these risks, and to understand how this will affect their business plans. An ORSA report will also have to be carried out on at least an annual basis.

6.6. QUALIFYING CAPITAL

The requirements as to the quality of capital resources in the *European Union's* Solvency II regime are issued both via a subdivision in tiers and eligibility criteria. Three tiers are present, each of them defined by different eligibility criteria. The criteria comprise the capital items' availability, subordination and duration; the ability to cancel distributions; the conditions on repayment/redemptions, loss absorption, etc. Additionally, Solvency II sets limits to each of the tiers in covering the minimum and regulatory capital requirements, depending on their quality.

In *Switzerland* qualifying capital resources are based on the excess of the market-consistent value of assets over liabilities, corresponding to Tier 1 'core capital', plus Tier 2 'supplementary capital', e.g. hybrid debt. Eligibility criteria apply to Tier 2 supplementary capital, including supervisory approval requirements and quantitative limits.

A subdivision of capital resources into three tiers is also present in the regimes of *Mexico*, *Singapore* and *South Africa*. The tiers also depend on the loss absorption, availability and seniority of the capital, with slight differences in each regime with regard to the definition of criteria and limits on the extent to which the tiers can be used to cover the capital requirements.

The solvency regimes in *Australia*, *Canada* and *China* subdivide the capital into two tiers. Whilst Tier 1 comprises mainly common equity and additional Tier 1 capital such as shareholders' funds and retained profits, Tier 2 is made up of subordinated debt. Tier 2 capital has to be approved according to various criteria and its contribution to the solvency capital of an insurer is limited.

In the current *Brazilian* regime, there is no explicit subdivision into capital tiers. Nevertheless, prudential and liquidity

criteria exist for the assets that are used for capital coverage. In addition, it is prescribed that companies must have 20 per cent of risk capital in assets with maximum liquidity.

In the **United States** regime, the quality of capital resources is controlled via eligibility criteria incorporated in the NAIC *Accounting Practices and Procedures Manual* and prudence in the balance sheet valuation. A tiering system is not applied.

In *Japan*, instead of a tiering concept, the 'core solvency margin' concept (net assets plus eligible reserves) is used to define an upper limit for inclusion of some secondary capital resources such as subordinated loans.

7. Concluding Remarks

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Insurance solvency regimes around the globe are currently undergoing significant changes. Jurisdictions in the North and South American, European and Asia-Pacific regions have reviewed or are reviewing their solvency regimes in order to enhance policyholder protection and financial stability.

Whilst many of the solvency regimes covered by this study have similarities, differences relating to the level of sophistication and application do exist. At a high level, the following basic principles are common amongst most of the regimes:

- All regimes examined follow a risk-based approach for deriving the regulatory capital requirements, aiming to comprehensively account for an insurer's quantifiable risks as exposed to its business activities.
- Required capital is often set at a confidence level of 99 per cent, or 99.5 per cent of the capital resources over a one-year horizon. Mostly VaR and in some cases TailVaR measures are applied.
- Whilst asset values in the solvency balance sheet of many regimes are often directly derived from IFRS (which applies fair value to most asset types), the valuation of liabilities is heterogeneous in terms of the required methodologies and assumptions, conservatism (if any) in base reserves, margins over current estimates (MOCE) and supplemental adequacy testing prescribed. Qualitative requirements including an ORSA are prescribed in most solvency regimes.

The risk-based global insurance capital standard (ICS), which is currently under development by the IAIS, is likely to bear upon these principles whilst attempting to cope with the challenges of harmonising multi-jurisdictional regulations, specific products jurisdiction or corporate law requirements at a global level.

Although this study demonstrates that there is much common ground with regard to the main elements of existing and developing solvency regimes, it is clear that these common elements are interpreted and/or applied in different ways, taking account of differences in regulatory or supervisory practices. To no one's surprise, the IAIS will have to take into account these differences as they strive towards their goal for a single ICS substantially the same across jurisdictions.

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9. Annex 1: Country Regimes

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AUSTRALIA

REGULATOR/SUPERVISORY BODY

- Australian Prudential Regulation Authority (APRA, www.apra.gov.au): in charge of licensing and prudential regulation of financial institutions.
- Australian Securities and Investments Commission (ASIC, www.asic.gov.au): responsible for consumer protection.

ACCOUNTING STANDARDS

- Australian GAAP: IFRS-equivalent accounting standards.
- Standards on general insurance: AASB 4 and AASB 1023.

SOLVENCY REGIME

- 2013: Update on capital adequacy requirements and implementation of the Life and General Insurance Capital Standards (LAGIC).
- Use of a three-pillar supervisory approach.
- Prudential Standards CPS 220 'Risk Management' became effective on 1 January 2015.

SOLVENCY ASSESSMENT

- **Regulatory capital requirement:** According to Prudential Standards GPS 110, an insurer must provide available capital in excess of its Prudential Capital Requirement (PCR). The standard method to calculate PCR accounts for the following risks: insurance, insurance concentration, asset, asset concentration and operational risk.
- **Group regulatory capital requirement:** Regulatory capital requirements are calculated at single entity and at group level.

- **Risk measure and confidence level:** The regulatory capital requirements are set at a 99.5 per cent probability of sufficiency over a 12-month period from the reporting date.
- Internal model/standard formula: The calculation of the required capital amount is based on APRA's 'Standard Method' or on an internal model approved by APRA.

VALUATION

- Assets: Valuation is based on Australian Accounting Board Standards. For SCR calculation purposes, intangible assets and goodwill as well as assets in excess of specified asset concentration limits are written off.
- Liabilities: Valuation is based on the Australian Accounting Standard AASB1038 adjusted according to the Australian prudential rules. The calculation is performed by discounting the best estimate with the risk-free yield curve (based on government bonds). Margins for future adverse experience are explicitly allowed and real interest rate shocks may be applied to the risk-free yield curve.

- CPS 510 'Governance' and CPS 220 'Risk Management' commenced on 1 January 2015.
- An ORSA is performed according to Prudential Standards GPS 110, the so-called Internal Capital Adequacy Assessment Process (ICAAP).

BRAZIL

REGULATOR/SUPERVISORY BODY

- Superintendência de Seguros Privados (SUSEP—National Regulatory Agency for Private Insurance, http:// susep.gov.br/): regulates, controls and inspects P&C, life, and pension insurance business lines.
- Agência Nacional de Saúde Suplementar (ANS—National Regulatory Agency for Private Health Insurance and Plans): regulates, standardises, controls and inspects the private health insurance and plans sector.

ACCOUNTING STANDARDS

- SUSEP Brazilian GAAP (compliant to IFRS).
- ANS GAAP (major part compliant to IFRS, except IFRS 4).

SOLVENCY REGIME

- Evolvement of the regulatory environment over the last three years.
- Development by SUSEP in collaboration with EIOPA of a standard risk-based solvency framework similar to Solvency II.
- Although Brazil has obtained the equivalence to Solvency II model regarding solvency assessment, some actions are under development, such as improving group supervision and ORSA regulation, which are planned to be implemented from 2017.

SOLVENCY ASSESSMENT

• **Regulatory capital requirement:** The regulatory capital requirement measures introduced by SUSEP are comparable to Pillar 1 of Solvency II, including market (interest rate risk, equity risk, commodities risk and currency risk by December 2016), liquidity, underwriting, credit and operational risk (with loss-data base requirement for companies above a certain premium level). For ANS, solvency capital is not based on risk, but on factors applied on premiums or losses.

- **Group regulatory capital requirement:** Regulatory capital requirements are calculated for the single company.
- **Risk measure and confidence level:** Currently, the solvency requirement is not set at a predetermined confidence level. A factor-based approach is in use.
- Internal model/standard formula: Internal models are allowed to substitute the standard formula. The process of internal model approval is not fully defined by SUSEP. For ANS-regulated insurers, there is no standard, defined risk-based capital formula. Internal models are allowed but applied rarely or not at all. It is planned to set the solvency requirement at a specified confidence level.

VALUATION

- Assets: According to local GAAP and similar to IFRS, accrued or market-consistent valuation is used depending on the type of assets. 'Mark-to-market', 'available for sale' and 'held to maturity' assets are distinguished.
- Liabilities: There are technical provisions that are defined in contracts (private pension plans mathematical provisions), provisions defined by accounting rules (premium reserves) and provisions defined in market consistent adjustments. For the provisions that are not defined with market-consistent adjustments and are below the adequate value, the companies must constitute an additional provision, turning the overall constituted value to a market value approach.

- SUSEP and ANS require specific risk disclosures in financials explanation notes.
- Discussion of a new regulation similar to Solvency II Pillar 2 requirements, including an ORSA by SUSEP.

CANADA

REGULATOR/SUPERVISORY BODY

The Office of the Superintendent of Financial Institutions (OSFI, http://www.osfi-bsif.gc.ca) sets solvency regulation for large Canadian insurance companies.

ACCOUNTING STANDARDS

Canadian GAAP (compliant to IFRS).

SOLVENCY REGIME

- In recent years, updated guidelines on regulatory risk management, requiring an enterprise-wide framework.
- ORSA requirement since 2014.
- Continuous evolvement of regulatory capital requirements.

SOLVENCY ASSESSMENT

- **Regulatory capital requirement:** The risk-based capital requirements in Canada reflect the quantifiable key risks an insurance company is exposed to. The calculation of RBC is performed using a scenario approach for insurance and interest rate risk, and a factor approach for credit, asset and operational risks. The regulatory framework does not directly account for the following risks: credit spread risk, liquidity risk, legal risk, strategic risk and reputational risk.
- **Group regulatory capital requirement:** The solvency framework is defined as a consolidated group solvency requirement.
- **Risk measure and confidence level:** The risk-based capital requirement is calibrated over a one-year horizon, using conditional TailVaR measure at confidence level of 99 per cent.
- **Internal model/standard formula:** The model is prescribed by the regulator as a standard approach. Internal models are only recognised for variable annuities and segregated fund guarantees.

VALUATION

- **Assets:** Asset valuation is based on the relevant accounting standards.
- Liabilities: The Canadian Asset Liability Method (CALM) is used to define actuarial reserves. For calculating the required capital, the liability cash flows are based on best-estimate assumptions without additional margins and discounted by regulatory prescribed rates for interest rate and insurance risk.

- An ORSA process is prescribed. It includes reporting requirements with forms and frequency and sign-off requirements.
- A guideline, issued in 2014 by OSFI, outlines key elements of the ORSA, such as comprehensive identification and assessment of risks, relating risk to capital, board oversight and senior management responsibility, monitoring and reporting, internal controls and objective review.

CHINA

REGULATOR/SUPERVISORY BODY

The China Insurance Regulatory Commission (CIRC, http://www.circ.gov.cn).

ACCOUNTING STANDARDS

Chinese Accounting Standards for Business Enterprises (ASBE).

SOLVENCY REGIME

- The China Risk Oriented Solvency System (C-ROSS) was introduced in 2016.
- C-ROSS is based on a three-pillar supervisory regime with similarities to Solvency II.
- C-ROSS formally came into force on 1 January 2016

SOLVENCY ASSESSMENT

- **Regulatory capital requirement:** Pillar 1 of C-ROSS links its capital requirements to three types of risks: insurance risk, market risk and credit risk. The capital requirements for these three types of risks are calculated using a prescribed standard method. Further, diversification effects between the risks are included when aggregating the risks.
- **Group regulatory capital requirement:** The details are still developing. In principle, the group aggregated capital requirement considers the capital requirements from group companies and subsidiaries, diversification effects, special considerations due to contagion effects, DSII etc.
- **Risk measure and confidence level:** The conceptual framework adopted a VaR approach for the calculation of the quantitative capital requirements. The confidence level will be set based on China's current circumstances, with reference to industry quantitative impact study (e.g. 99.5 per cent).
- Internal model/standard formula: The standard formula is adopted.

VALUATION

• **Assets/liabilities:** China does currently not follow a market-consistent valuation due to the lack of a sophisticated market.

- The risk management requirements and assessment (SARMRA) is one of CIRC's supervisory elements in Pillar 2 that has a strong focus on the companies' own solvency management.
- CIRC sets the minimum standards of risk management for insurers and periodically evaluates their practices, such as governance structure, internal controls, management structure and processes. Additionally, insurance companies' risk management capability and risk profile is periodically assessed.

EUROPEAN UNION (Solvency II)

REGULATOR/SUPERVISORY BODY

- Insurance undertakings in the European Union are supervised by national competent authorities.
- The European Insurance and Occupational Pensions Authority (EIOPA, https://eiopa.europa.eu) plays an important role in coordinating supervisory rules and practice and in developing a common supervisory approach (single European rule book).

ACCOUNTING STANDARDS

The International Financial Reporting Standards (IFRS) must be applied in the consolidated financial statements of listed insurance undertakings.

SOLVENCY REGIME

- The Solvency II Framework Directive (2009/138/EC) was adopted on 25 November 2009 and became applicable as of 1 January 2016.
- Solvency II introduces a new solvency capital regime based on a three-pillar approach:
 - > Pillar 1: Quantitative requirements.
 - > Pillar 2: Governance requirements and supervisory review process.
 - Pillar 3: Public disclosure and supervisory reporting.

SOLVENCY ASSESSMENT

- **Regulatory capital requirement:** The Solvency Capital Requirement (SCR) must comprise all quantifiable risk an insurer is exposed to. Risks that are not directly quantifiable, such as reputational or strategic risk, are covered through a more qualitative assessment under Pillar 2. The SCR can either be calculated through a standard formula or a full or partial internal model, developed by the company and approved by the supervisor.
- **Group regulatory capital requirement:** The SCR has to be calculated at single level for all entities part of a group and at group level.

- **Risk measure and confidence level:** SCR is calibrated at a 99.5 per cent level of confidence over a period of one year, using a VaR measure.
- Internal model/standard formula: The SCR may be computed by internal models for all or some of the risks. Internal models must fulfill specific and demanding requirements, including documentation and integration of the model in risk management and decision-making processes. Internal models are subject to the regulator's approval.

VALUATION

- Assets: A market-consistent valuation is applied for the assets side, utilising a mark-to-market or markto-model approach. In the economic balance sheet, intangible assets and goodwill are not recognised.
- Liabilities: Technical provisions are valued on a market-consistent basis, comprising the sum of the best estimate and a margin over current estimate. The best-estimate liability represents the probability-weighted average of future cash flows discounted using a risk-free rate term structure. A matching adjustment or volatility adjustment may be included in the discount rate as a countercyclical element.

QUALITATIVE REQUIREMENTS

The qualitative requirements are set out in Pillar 2 of the framework. They include requirements for the system of governance, risk management, internal control, outsourcing activities, and ORSA as well as on the supervisory review process.

MEXICO

REGULATOR/SUPERVISORY BODY

Comisión Nacional de Seguros y Fianzas (CNSF, www.cnsf. gob.mx).

ACCOUNTING STANDARDS

Mexican Financial Reporting Standards (IFRS compliant).

SOLVENCY REGIME

- Evolvement of the regulatory environment over the last years, aiming at a more sophisticated risk-based capital approach than the actual one.
- The Insurance and Surety Institutions Law (LISF) is inspired by Solvency II.
- The new regulation with certain quantitative and disclosure requirements is planned to become effective by 2016.

SOLVENCY ASSESSMENT

- Regulatory capital requirement: The Mexican solvency requirements are based on an economic valuation of the whole balance sheet. The risk-based capital for an insurer is determined according to the standard formula software provided by the regulator. Liquidity, reputational and strategic risks are not quantified in the standard formula.
- **Group regulatory capital requirement:** Regulatory capital requirements are calculated for the single company.
- **Risk measure and confidence level:** VaR is the risk measure for calibrating the regulatory capital requirement at a confidence level of 99.5 per cent over a one-year horizon.
- **Internal model/standard formula:** Internal models could be applied after the transition period.

VALUATION

- Assets: LISF introduces a requirement to use market values for asset valuation purposes. Institutions should classify their investments in the following three categories that are compatible with IFRS: securities to finance the operation, to be held to maturity, or available for sale.
- Liabilities: The value of the technical provisions should correspond to their market value, i.e. to the amount another insurer would pay if all contractual rights and obligations of the insurance portfolio were transferred. In order to comply with this requirement, institutions should value technical provisions by using best-estimate methodologies (BEL), plus a margin over current estimate. The BEL should reflect the probability-weighted average of the expected present value of future cash flows, using the relevant risk-free interest rate term structure. Countercyclical elements are considered in the valuation approach.

- Requirements for the system of corporate governance deal with the control functions, outsourcing, compliance and reporting.
- An ORSA is prescribed which is intended to provide a multi-year overview of the company's risks in an integrated risk management approach, covering all relevant risks of the company.

JAPAN

REGULATOR/SUPERVISORY BODY

Financial Services Agency of the Japanese Government (FSA, www.fsa.go.jp); Bureau of the Ministry of Finance.

ACCOUNTING STANDARDS

Japanese GAAP.

SOLVENCY REGIME

- Requirements are set in the Insurance Business Act.
- An updated financial monitoring policy for financial institutions was announced in 2014.
- Further evolvements of the regulatory framework focusing on supervision, capital adequacy and the introduction of an economic value-based solvency regime are ongoing.

SOLVENCY ASSESSMENT

- **Regulatory capital requirement:** Regulatory capital requirement reflect the underlying risks of the insurance company.
- **Group regulatory capital requirement:** Regulatory capital requirements have to be calculated at single-entity and at group level.
- **Risk measure and confidence level:** Generally, VaR is used as a risk measure. The confidence level varies in dependence on the risk category: 95 per cent of VaR for general underwriting and investment related risks, 99 per cent for the third underwriting risks (generally health, accident insurance), 99.5 per cent for natural catastrophe risk from earthquakes and 98.7 per cent for natural catastrophe risk from flood and storm.
- **Internal model/standard formula:** The use of an internal model is allowed only for catastrophe and minimum guarantee risks upon specific requirements set by the supervisor.

VALUATION

- **Assets:** Assets and liabilities are measured according to the Japanese GAAP principles with some adjustments for the solvency assessment. For most of the assets a fair value measurement applies.
- Liabilities: Liabilities for life business are measured based on locked-in assumptions combined with a future cash-flow analysis in order to verify if accumulating additional reserves in addition to existing technical provisions is required. Liabilities for non-life business are not based on discounted values, except for long-term business. Generally, a current estimate for liability valuation is not used, and the discount rate, where applicable, is a statutory-defined assumed interest rate based on Japanese government bond yields and a safety factor coefficient.

QUALITATIVE REQUIREMENTS

• Insurers are required to undertake a formal ORSA from 2015.

SINGAPORE

REGULATOR/SUPERVISORY BODY

The Monetary Authority of Singapore (MAS, www.mas.gov.sg).

ACCOUNTING STANDARDS

- Singapore Standards, equivalent to IFRS with modifications.
- New financial reporting framework, which is identical to IFRS, is planned to be effective for annual periods beginning on or after 1 January 2018 for Singapore listed companies with voluntary application for non-listed Singapore-incorporated companies.

SOLVENCY REGIME

- The RBC framework for insurers was introduced in 2004 by MAS.
- Supported by an industry consultation process in 2012, MAS reviewed the framework and issued details of the new risk-based capital regulatory calculations, called RBC 2, in 2014. The final industry consultation combined with a Quantitative Impact Study is expected for Q2 2016. An official implementation date has not been communicated yet, but MAS indicated that the industry will be given two years to comply with the new rules making 1 January 2019 a realistic date for introducing RBC2.

SOLVENCY ASSESSMENT

- Regulatory capital requirement: Singapore links its regulatory capital requirements to insurance, market, credit and asset concentration risk together with asset and liability mismatching. New explicit risk charges for operational risk, credit spread risk and insurance catastrophe risk will be introduced under the revised framework, RBC 2. The MAS also requires insurers to perform a series of prescribed stress tests on an annual basis to determine the robustness of their capital positions.
- **Group regulatory capital requirement:** Group solvency requirements are applicable to groups where MAS is the group-wide supervisor.

- **Risk measure and confidence level:** Currently, a factor approach to determine the total risk requirements which correspond to a VaR with a 99.5 per cent confidence level over a one-year period is in discussion.
- Internal model/standard formula: The use of internal models to calculate regulatory capital requirement is currently not allowed, but will be considered in later phases of the RBC 2 review. However, insurers are encouraged to use internal models for their ORSA.

VALUATION

- Assets: The valuation rules for assets are set out in the Insurance ('Valuation and Capital') Regulations 2004 ('Valuation Regulations'). The valuation of other types of assets follows local GAAP standards that are in compliance with IFRS.
- **Liabilities:** The liabilities for both life and non-life businesses are calculated based on expected cash flows of the underlying policies, with appropriate provision for adverse deviation added to the expected current estimate. Discounting of cash-flow projections is used for life insurance (risk-free rate), whilst for general insurance, no discounting is employed. As part of the RBC 2 review, it is intended to introduce a matching adjustment concept to reflect the illiquid nature of life liabilities. Such adjustment will be added to the risk-free rates for certain life business that meet the eligibility criteria.

- Singapore has requirements on governance, internal controls, supervisory review and public disclosure.
- Additionally, insurers are required to undertake a formal ORSA, at least annually. The ORSA should encompass all reasonable foreseeable and relevant material risks of the insurer and identify the relationship between the risks, as well as the level and quality of financial resources needed. Tier 1 insurers have to submit their ORSA to MAS annually, whereas for smaller Tier 2 insurers it's only every three years.

SOUTH AFRICA

REGULATOR/SUPERVISORY BODY

 Currently the South African Reserve Bank (SARB, www. resbank.co.za) has the responsibility for prudential regulation of banks and the Financial Services Board (FSB) for the prudential and market conduct regulation of insurers and other non-banking financial institutions. In future (post the enactment of the Financial Sector Regulation Bill) the Prudential Authority, under the auspices of the SARB, will be responsible for the prudential regulation of both banks and insurers and the FSB will become the Financial Sector Conduct Authority responsible for market conduct regulation.

ACCOUNTING STANDARDS

International Financial Reporting Standards.

SOLVENCY REGIME

- Major change in insurance regulation with upcoming Solvency Assessment and Management (SAM). SAM is a risk-based regulatory framework on the basis of three pillars that is considered equivalent to Solvency II but adapted to South African circumstances.
- The framework will be enshrined in legislation by the Insurance Bill and is expected to be effective on 1 January 2017.

SOLVENCY ASSESSMENT²⁵

- **Regulatory capital requirement:** The regulatory capital requirement calculation will capture a number of quantifiable risks including market, life underwriting, non-life underwriting, credit and operational risks. Business, liquidity, reputational and strategic risks, and any other risk that the insurer believes is relevant should be taken into consideration as part of the ORSA.
- **Group regulatory capital requirement:** Regulatory capital requirements are calculated for the single company.

- **Risk measure and confidence level:** Calibration is done at a 99.5 per cent confidence level over one year, applying a VaR of the basic own funds over a one-year time horizon.
- Internal model/standard formula: The standard formula to calculate the SCR is based on a modular approach, primarily using a scenario approach, even though a factor approach applies for some risks such as operational risk. The use of internal models is subject to defined criteria and a supervisor's approval process.

VALUATION

- **Assets:** Market consistency is the overriding principle used for the valuation of assets and liabilities. IFRS builds the accounting basis, explicitly set out in the SAM framework, and is mainly applied to assets and liabilities other than technical provisions.
- Liabilities: Liability measurement is performed on a current estimate plus margin over current estimate approach. The current estimate is a probability weighted discounted cash-flow calculation of all cash flows that are expected for the insurance contract, based on the best estimates of the insurer as at the valuation date.

QUALITATIVE REQUIREMENTS

The qualitative requirements provided here are based on the future prudential regulatory regime that will be given effect to through the Insurance Bill, which is currently serving before parliament.

- The SAM framework has a focus on the governance system, including the topics of board functions and composition, the risk management system, strategy and policies, internal control system; control functions and outsourcing.
- Additionally, insurers are required to undertake a formal ORSA process. An ORSA report has to be sent to the regulator on at least an annual basis.

²⁵ The solvency assessment provided here is based on the future prudential regulatory regime that will be given effect to through the Insurance Bill, which is currently serving before parliament.

SWITZERLAND

REGULATOR/SUPERVISORY BODY

 FINMA's (www.finma.ch) mandate is to supervise banks, insurance companies, exchanges, securities dealers, collective investment schemes, and their asset managers and fund management companies. It further regulates distributors and insurance intermediaries.

ACCOUNTING STANDARDS

• Swiss GAAP and IFRS. The SST does not rely on or make reference to these.

SOLVENCY REGIME: SWISS SOLVENCY TEST (SST)

- The regime is principles-based and uses a risk-oriented approach to its supervision of insurance companies.
- The intensity of supervision is proportionate to the risk potential of an insurance company.
- The SST has been developed since 2003 and the legislation has entered into force in 2006, with a transitional period of 5 years. The SST is a fully risk-based system, using a total balance sheet that is fully market consistent. Since 2007/8 insurance companies and groups need to submit a comprehensive SST report to FINMA.
- Since 2011 SST can be directly used by FINMA to enforce supervisory action based on a ladder on intervention. In 2015, the legal basis for the SST has been strengthened and revised.
- The European Union (Parliament, Commission and Council) have classified SST as fully equivalent to Solvency II. SST is the only regulatory systems that has been granted equivalence from the very beginning of Solvency II.

SOLVENCY ASSESSMENT

 Regulatory capital requirement: FINMA uses the SST as a supervisory tool, which adopts a risk-based approach using a total (i.e. no off-balance sheet items), fully market-consistent balance sheet.

- SST captures all risk to the market-consistent balance sheet of the insurance company or group.
- Operational risk is sometimes not required to be quantified in the SST. Despite this, for companies calculating both, the SST ratio could sometimes be lower than the SII ratio.
- **Group regulatory capital requirement:** For Swissbased groups, the requirement is set both at solo and a group level (group SST).
- **Risk measure and confidence level:** SST sets the Required Capital Benchmark at a level needed to pursue the business planned for the next 12 months. The required capital benchmark is the 1 per cent TailVaR of the capital resources over a one-year time horizon (99 per cent confidence level).
- Internal model/standard formula: Insurance companies need to calculate their Required Capital Benchmark appropriately. If needed, they must use an internal model, especially where the FINMA developed standard models (which generally are stochastic models and not formulas) do not calculate the Required Capital Benchmark correctly. Internal models have to fulfil specific criteria and are subject to approval by the supervisor.

VALUATION

- Assets: Market (consistent) values for all assets
- Liabilities: Uses optimally risk reducing replication (giving rise to a best estimate) and a cost of capital MOCE (to cover the cost of Capital Resources during the entire run-off of the residual risk) for all liabilities. This implies truly risk-free rates and proper valuation of all options and guarantees.
- Supervisors have the full, unrestricted set of interventions available as they can perform any transaction at prevailing market prices.

QUALITATIVE REQUIREMENTS

Qualitative requirements are in line with Solvency II and include an ORSA.

UNITED STATES

REGULATOR/SUPERVISORY BODY

- Insurance companies are supervised by state insurance commissioners.
- The Federal Reserve has obtained supervisory powers for designated systemically important insurers.
- The National Association of Insurance Commissioners (NAIC, www.naic.org) is the national standard-setting organisation created and governed by the chief insurance regulators from the 50 states, the District of Columbia and five U.S. territories. It has an important coordinating function, provides regulatory support for state insurance departments and develops model acts, which are taken up by individual states.

ACCOUNTING STANDARDS

• U.S. statutory accounting principles.

SOLVENCY REGIME

- The NAIC's Solvency Modernization Initiative (SMI) started in June 2008 and was completed in 2012, focuses on five key solvency areas: capital requirements, international accounting, insurance valuation, reinsurance, and group regulatory issues.
- The principles-based approach to valuation of life insurance liabilities is to be effective in all U.S. states from 1 January 2017.

SOLVENCY ASSESSMENT

- **Regulatory capital requirement:** The U.S. risk-based capital (RBC) formula is primarily factor-based and considers all risks that are quantifiable and material for the industry, i.e. the U.S. framework typically covers all risks to some degree even if they are not explicitly reflected within the calculation of required capital.
- Strategic risk, reputational risk and currency risk are not explicitly accounted for in the RBC. The factors of the formula are derived from historical industry-wide data, whilst internal models are used for interest rate and market risk only to some extent.

- **Group regulatory capital requirement:** Regulatory capital requirements are calculated for the legal entity insurer. Recently, an initiative to develop a calculation of group capital from a regulatory perspective has been launched.
- **Risk measure and confidence level:** The formula was not designed to produce a minimum level of aggregate RBC at an explicit level representing a certain statistical outcome. However, the components and factors of RBC, such as asset risk or the catastrophe risk charge, do have a statistical calibration base.
- Internal model/standard formula: Internal model application, using prescribed parameters and time horizons, is limited to specific products in the life RBC formula and will be utilised in the catastrophe risk module currently under development for P/C insurers. For the (limited) cases where partial internal models are allowed for life insurance, these models do not need a supervisory authority's approval as regulatory minimum/floor scenarios persist.

VALUATION

- Assets: Regulatory reporting is based on statutory accounting principles (SAP), applying various prescribed modifications to U.S. GAAP and using an amortised cost basis for most bonds and fixed-income assets rather than market values (e.g. used for equities and other similar investments). Additionally, assets are subject to impairment testing.
- Liabilities: Life and health insurance liabilities are valued with significant prudence, according to SAP and distinct from U.S. GAAP, whilst most non-life (property/ casualty) liabilities are valued aligned with U.S. GAAP. Liabilities are subject to adequacy testing, utilising a minimum reserve that uses locked-in assumptions as well as a cash-flow projection model with an 'unlocked book yield' approach. The discount rate formula is intended to represent a prudent estimate of the investment earnings of a typical insurer's investment portfolio over a long time horizon. For non-life insurance, discounting is not used except for qualifying claims in certain defined lines of business (e.g. workers' compensation and certain long-term disability policies).

- The Corporate Governance Annual Disclosure Model Act of 2014 requires insurers to disclose their corporate governance framework and structure.
- An ORSA has to be performed by larger insurers and insurance groups from 2015.

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9. Annex 2: Survey Questionnaire

1. VALUATION PRINCIPLE

- a. Are assets and liabilities measured consistently, i.e. based on comparable principles (for example, at market-consistent values?) If not, please explain shortly the difference in principles used.
- b. Is valuation based upon local GAAP? Is local GAAP adjusted? How?
- c. Is valuation based upon IFRS? Is IFRS adjusted? How?
- d. Are there important differences in the methodologies used for life and non-life, respectively?

Especially on liability measurement:

- i. Are companies required to base liability valuation on updated assumptions?
- ii. Are liabilities estimated independently from premiums?
- iii. If liabilities are based on cash-flow projections, are conservative assumptions made or do you calculate a current estimate? Is discounting of cash-flow projections used?
- iv. If a current estimate is used, is a margin over current estimate added to it?
- v. Is the discount rate used linked to assets? Or which discount rate is used?
- vi. Are there countercyclical elements, reflecting the degree of illiquidity, in the discount rate used? Or would you consider countercyclical elements to be built into the valuation approach?

2. RISK SENSITIVITY

- a. Does the solvency capital requirement reflect the underlying risks of the insurance company?
- b. Are all quantifiable risks taken included in the prescribed formula for calculating the capital requirement?
- c. Is the formula for the calculation of the solvency capital requirement based on a factor or a scenario approach?

- d. Would you say that the solvency requirements provide incentives for sound risk management, for example by proper reflection of risk diversification and risk management?
- e. Are there any risks not taken into account? Which ones and how/where are they considered?
- f. Is the impact of risk mitigation techniques allowed or are there restrictions?

3. CALIBRATION

- a. Is the solvency requirement explicitly set at a predetermined confidence level? Which level? What is the risk measure and time horizon?
- b. Are management actions allowed for in the calculation of required capital?
- c. Is the confidence level set taking into account the existence of an insurance guarantee protection scheme? (besides capital requirements)

4. QUALITATIVE REQUIREMENTS

- a. Does the solvency regime besides quantitative requirements also focus on governance issues, the supervisory reporting process, reporting requirements and other qualitative requirements etc.? Which?
- b. Are companies required to undertake a formal ORSA (own risk and solvency assessment) process?

5. GROUP ISSUES

- a. Do groups have to calculate a group solvency requirement or are solvency capital requirements only calculated for solo entities? Or is there a requirement to do both?
- b. If a group solvency capital requirement is calculated, is account taken of diversification effects at group level?
- c. Are diversification effects fully taken into account?
- d. Is there a requirement to perform an ORSA process at group level?

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6. INTERNAL MODELS

- a. Is it allowed to calculate the solvency capital requirement based upon an internal model?
- b. What is the scope of the internal model, only required capital or also available capital (valuation)?
- c. Are there specific requirements which must be met when preparing an internal model (such as predefined parameters by supervisors?)
- d. Who determines the criteria for approval of internal models?
- e. Who is responsible for approving internal models—the (group) supervisor? Or is responsibility delegated to an external party?

7. MULTI-LAYER SUPERVISORY SYSTEM

a. Are multi-layer groups required to calculate a solvency capital requirement at each level of the group?

8. QUALIFYING CAPITAL

- a. Is the quality of capital resources controlled via a subdivision in tiers or handled via eligibility criteria or for example prudence in the balance sheet valuation?
- b. If tiering is applied, how many tiers are required?
Acknowledgements

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We especially thank the responding insurance groups and insurance regulators for having taken the time to reply to our structured questionnaire.

This report demonstrates that there is much common ground with regard to the main objectives and key elements of existing and developing solvency regimes. The International Association of Insurance Supervisors (IAIS) is currently developing its global Insurance Capital Standard (ICS), as part of its Common Framework for the supervision of internationally active insurance groups (ComFrame). It is clear that the common elements identified in this report are interpreted and applied in different ways. The IAIS will have to take into account these differences as they strive towards their goal to introduce the ICS.