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.

**Example 2:** 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 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. 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. 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 and policyholder 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 for other lines of insurance, including life or disability insurance where genetic 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. A similar dynamic exists with respect to race. Some courts permitted life insurers or homeowner insurers 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 completely 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 facie 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 statutes 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
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, anti-discrimination norms, and mechanisms of distributive justice. However, adequately addressing these issues lies well beyond the scope of this chapter.

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

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WORKING PAPERS ON FINANCE NO. 2013/5

INSTITUT FÜR VERSICHERUNGSWIRTSCHAFT (I.VW – HSG)

JANUARY 2013
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 billion 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.  


Table 1. Recommendations for Microinsurance Regulation

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Examples</th>
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| 1. Reduce market entry barriers | ▪ Reconsider licensing requirements, particularly in light of innovative uses of 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 demand | ▪ Provide and support comprehensive risk management educational initiatives, 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 efficiency | ▪ Offer data and management support  
▪ Provide training to agents, actuaries, underwriters, and insurance managers  
▪ Allow and encourage involvement of international reinsurers and alternative risk transfer mechanisms |

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,
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

<table>
<thead>
<tr>
<th>Criteria Sub-criteria</th>
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<tbody>
<tr>
<td>1. Regulation should be adequate</td>
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<tr>
<td>• Governments should enact and enforce laws that provide an effective framework for competitive insurance markets</td>
</tr>
<tr>
<td>• Governments should enact and enforce laws that establish reasonable solvency standards and regulation as the primary means of protecting the public</td>
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<tr>
<td>• As part of reasonable solvency regulation, governments should establish, make public, and enforce appropriate and consistent rules and procedures for identifying and dealing with financially troubled insurers</td>
</tr>
<tr>
<td>• Governments should establish an insurance regulatory agency that operates in the national interest and has sufficient resources to efficiently, effectively, and impartially enforce the nation’s insurance laws and regulations</td>
</tr>
<tr>
<td>• Governments should develop and implement pro-competitive insurance regulation in a way and at a pace that ensures adequate protection of the public but that proceeds without undue delay and is subject to a reasonable implementation timetable</td>
</tr>
<tr>
<td>2. Regulation should be impartial</td>
</tr>
<tr>
<td>• Governments should ensure that regulation and enforcement are applied with consistency and impartiality between competitors, irrespective of the nationality</td>
</tr>
<tr>
<td>3. Regulation should be minimally intrusive</td>
</tr>
<tr>
<td>• Insurance regulation should be limited to that which is (1) justified as providing meaningful protection; and (2) minimally intrusive to accomplish its purpose</td>
</tr>
<tr>
<td>• 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</td>
</tr>
<tr>
<td>• 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</td>
</tr>
<tr>
<td>4. The regulatory process should be transparent</td>
</tr>
<tr>
<td>• Governments should make existing insurance laws and regulations easily available to the public, including to consumers and businesses and to insurers and other financial services providers</td>
</tr>
<tr>
<td>• 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</td>
</tr>
</tbody>
</table>

(b) Microinsurance

Microinsurance can be defined as “a financial arrangement designed to protect low-income 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.
Table 3. Central Challenges in Microinsurance Regulation

<table>
<thead>
<tr>
<th>Issue</th>
<th>Possible Regulatory Response</th>
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| 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 |

(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. To date, only six countries (Brazil, India, Mexico, Peru, the Philippines, and Taiwan) have specific microinsurance regulation. 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. 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. 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.  

(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, anti-selection, 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.  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.\(^\text{13}\) We also provide comparison data for the highly developed markets of the United States, the United Kingdom, and Germany.
Table 5. Regulatory Environment

<table>
<thead>
<tr>
<th>Country</th>
<th>Government Effectiveness a</th>
<th>Rule of Law a</th>
<th>Regulatory Quality a</th>
<th>Control of Corruption a</th>
<th>Economic Freedom b</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>0.57</td>
<td>0.55</td>
<td>0.56</td>
<td>0.60</td>
<td>0.45</td>
</tr>
<tr>
<td>India</td>
<td>0.55</td>
<td>0.55</td>
<td>0.39</td>
<td>0.36</td>
<td>0.33</td>
</tr>
<tr>
<td>Mexico</td>
<td>0.62</td>
<td>0.34</td>
<td>0.59</td>
<td>0.45</td>
<td>0.71</td>
</tr>
<tr>
<td>Peru</td>
<td>0.47</td>
<td>0.32</td>
<td>0.67</td>
<td>0.50</td>
<td>0.78</td>
</tr>
<tr>
<td>Philippines</td>
<td>0.52</td>
<td>0.35</td>
<td>0.44</td>
<td>0.22</td>
<td>0.42</td>
</tr>
<tr>
<td>Taiwan</td>
<td>0.85</td>
<td>0.82</td>
<td>0.84</td>
<td>0.74</td>
<td>0.91</td>
</tr>
</tbody>
</table>

Panel A: Countries with microinsurance-specific regulation

Panel B: Countries with no microinsurance-specific regulation

CIMA<sup>c</sup> 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
- <sup>a</sup> 2010 Worldwide Governance Indicators by the World Bank (2011)
- <sup>b</sup> 2012 Index of Economic Freedom by the Heritage Foundation (2012)
- <sup>c</sup> 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. In contrast with most African nations, Taiwan demonstrates a relatively strong...
and developed government and economy. 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 risk-taking 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). 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. 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 Philippines adopted ongoing performance requirements for 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.
REFERENCES


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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.
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).

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.

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.

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.

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.

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.
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.

The International Monetary Fund (IMF) classifies Taiwan as an advanced economy (see IMF, 2012).

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).

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).

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
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 appropriately\(^1\).

As another example of the above concept, assume a balance sheet with risk in both assets and liabilities. 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.)

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\(^1\) 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.
On page 9 of this reading (Section 1.1.3) 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:

- **Inforce** – 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.

- **Break-up or winding-up** – 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.

- **Merger** – 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.

Page 12 (section 1.4) 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
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 relative\(^2\) to P&C products, and in some cases such products have financial call provisions\(^3\) 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.
Solvency

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

**Ceded Reinsurance Impact on Financial Statements**

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

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

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

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

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

1. **Increase large line capacity**

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

**Beginning Assumptions (the “Without” column):**

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

**Altered Assumptions (the “With” column):**

- XYZ buys a “surplus share” pro rata reinsurance treaty that cedes premiums and losses for higher valued homes, with the ceding percentage for each policy equal to the excess of the home value over $500,000 divided by the total home value. (For example, for a home worth $625,000, the ceded percentage would be 125/625, or 20%.)
- This is the only reinsurance purchased by XYZ.
- The altered assumptions again reflect level premium volume and a steady state, in which XYZ has been writing identical business over a period of years.
• With access to the higher-value market, XYZ writes 40% more business and achieves $1.4 million in gross written premium. However under the treaties it cedes $300,000 of premium.
• The loss ratio remains 75% on both net and ceded business. However reserves increase relative to loss, because claims on more expensive properties take longer to develop.
• The expense ratio remains 20% of net written premium. The reinsurer pays a ceding commission to compensate for commissions on ceded business, so there is no net additional commission on ceded premium.
• Agent balances remain equal to 10% of premium, of which a portion, equal to the percent of premium ceded, is due to the reinsurer.
• We arbitrarily assume only a small increase in surplus, matching the increase in current year income.
Example 1
XYZ Insurance Company
Impact of Large Line Capacity Treaty

<table>
<thead>
<tr>
<th>Balance Sheet</th>
<th>Without</th>
<th>With</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assets</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bonds</td>
<td>2,575</td>
<td>2,662</td>
<td>87</td>
</tr>
<tr>
<td>Cash</td>
<td>75</td>
<td>113</td>
<td>38</td>
</tr>
<tr>
<td>Agents Balances</td>
<td>100</td>
<td>140</td>
<td>40</td>
</tr>
<tr>
<td>Total</td>
<td>2,750</td>
<td>2,915</td>
<td>165</td>
</tr>
<tr>
<td><strong>Liabilities</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loss Reserves</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross</td>
<td>750</td>
<td>1,125</td>
<td>375</td>
</tr>
<tr>
<td>Ceded</td>
<td>0</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>Net</td>
<td>750</td>
<td>825</td>
<td>75</td>
</tr>
<tr>
<td>Ceded Agents Balances</td>
<td>0</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Total</td>
<td>1,250</td>
<td>1,405</td>
<td>155</td>
</tr>
<tr>
<td><strong>Surplus</strong></td>
<td>1,500</td>
<td>1,510</td>
<td>10</td>
</tr>
</tbody>
</table>

**Income Statement**

<table>
<thead>
<tr>
<th>Income Statement</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Earned Premium</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross</td>
<td>1,000</td>
<td>1,400</td>
<td>400</td>
</tr>
<tr>
<td>Ceded</td>
<td>0</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>Net</td>
<td>1,000</td>
<td>1,100</td>
<td>100</td>
</tr>
<tr>
<td>Incurred Losses</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross</td>
<td>750</td>
<td>1,050</td>
<td>300</td>
</tr>
<tr>
<td>Ceded</td>
<td>0</td>
<td>225</td>
<td>225</td>
</tr>
<tr>
<td>Net</td>
<td>750</td>
<td>825</td>
<td>75</td>
</tr>
<tr>
<td>Expenses</td>
<td>200</td>
<td>220</td>
<td>20</td>
</tr>
<tr>
<td>Underwriting Income</td>
<td>50</td>
<td>55</td>
<td>5</td>
</tr>
<tr>
<td>Investment Income</td>
<td>133</td>
<td>139</td>
<td>6</td>
</tr>
<tr>
<td>Total Income</td>
<td>183</td>
<td>194</td>
<td>11</td>
</tr>
<tr>
<td><strong>Written Premiums</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross</td>
<td>1,000</td>
<td>1,400</td>
<td>400</td>
</tr>
<tr>
<td>Ceded</td>
<td>0</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>Net</td>
<td>1,000</td>
<td>1,100</td>
<td>100</td>
</tr>
</tbody>
</table>

**Other Financial Statistics**

<table>
<thead>
<tr>
<th>Other Financial Statistics</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross WP/Surplus</td>
<td>67%</td>
<td>93%</td>
<td>26%</td>
</tr>
<tr>
<td>Net WP/Surplus</td>
<td>67%</td>
<td>73%</td>
<td>6%</td>
</tr>
<tr>
<td>Gross Loss Reserves/Surplus</td>
<td>50%</td>
<td>75%</td>
<td>25%</td>
</tr>
<tr>
<td>Net Loss Reserves/Surplus</td>
<td>50%</td>
<td>55%</td>
<td>5%</td>
</tr>
<tr>
<td>Ceded Reserves/Surplus</td>
<td>0%</td>
<td>30%</td>
<td>30%</td>
</tr>
</tbody>
</table>
Analysis of impact (from Exhibit 1)

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

2. Provide Catastrophe Protection

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

Beginning Assumptions (the “Without” columns):

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

Altered Assumptions (the “With” columns):

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

### Balance Sheet

<table>
<thead>
<tr>
<th></th>
<th>No Cat Event Without</th>
<th>With</th>
<th>Difference</th>
<th>Cat Event Without</th>
<th>With</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assets</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bonds</td>
<td>2,575</td>
<td>2,525</td>
<td>(50)</td>
<td>2,480</td>
<td>2,430</td>
<td>(50)</td>
</tr>
<tr>
<td>Cash</td>
<td>75</td>
<td>75</td>
<td>-</td>
<td>120</td>
<td>120</td>
<td>-</td>
</tr>
<tr>
<td>Agents Balances</td>
<td>100</td>
<td>100</td>
<td>-</td>
<td>100</td>
<td>100</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2,750</td>
<td>2,700</td>
<td>(50)</td>
<td>2,700</td>
<td>2,650</td>
<td>(50)</td>
</tr>
</tbody>
</table>

|                  |                      |      |            |                   |      |            |
| **Liabilities**  |                      |      |            |                   |      |            |
| Loss Reserves    |                      |      |            |                   |      |            |
| Gross            | 750                  | 750  | -          | 1,200             | 1,200| -          |
| Ceded            | 0                    | 0    | -          | 0                 | 400  | 400        |
| Net              | 750                  | 750  | -          | 1,200             | 800  | (400)      |
| **Total**        | 1,250                | 1,250| -          | 1,700             | 1,320| (380)      |

|                  |                      |      |            |                   |      |            |
| **Surplus**      |                      |      |            |                   |      |            |
| **Total**        | 1,500                | 1,450| (50)       | 1,000             | 1,330| 330        |

### Income Statement

|                  |                      |      |            |                   |      |            |
| Earned Premium   |                      |      |            |                   |      |            |
| Gross            | 1,000                | 1,000| -          | 1,000             | 1,000| -          |
| Ceded            | 0                    | 50   | 50         | 0                 | 70   | 70         |
| Net              | 1,000                | 950  | (50)       | 1,000             | 930  | (70)       |
| Incurred Losses  |                      |      |            |                   |      |            |
| Gross            | 750                  | 750  | -          | 1,250             | 1,250| -          |
| Ceded            | 0                    | 0    | -          | 0                 | 400  | 400        |
| Net              | 750                  | 750  | -          | 1,250             | 850  | (400)      |
| Expenses         | 200                  | 200  | -          | 200               | 200  | -          |
| Underwriting Income | 50                 | -    | (50)       | (450)            | (120)| 330        |
| Investment Income| 133                  | 130  | (3)        | 130               | 128  | (3)        |
| **Total Income** | 183                  | 130  | (53)       | (320)            | 8    | 328        |

|                  |                      |      |            |                   |      |            |
| Written Premiums |                      |      |            |                   |      |            |
| Gross            | 1,000                | 1,000| -          | 1,000             | 1,000| -          |
| Ceded            | 0                    | 50   | 50         | 0                 | 70   | 70         |
| Net              | 1,000                | 950  | (50)       | 1,000             | 930  | (70)       |

### Other Financial Statistics

<table>
<thead>
<tr>
<th></th>
<th>Gross WP/Surplus</th>
<th>Net WP/Surplus</th>
<th>Gross Loss Reserves/Surplus</th>
<th>Net Loss Reserves/Surplus</th>
<th>Ceded Reserves/Surplus</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>67%</td>
<td>69%</td>
<td>2%</td>
<td>100%</td>
<td>75%</td>
</tr>
<tr>
<td></td>
<td>67%</td>
<td>66%</td>
<td>-1%</td>
<td>100%</td>
<td>70%</td>
</tr>
<tr>
<td></td>
<td>50%</td>
<td>52%</td>
<td>2%</td>
<td>120%</td>
<td>90%</td>
</tr>
<tr>
<td></td>
<td>50%</td>
<td>52%</td>
<td>2%</td>
<td>120%</td>
<td>60%</td>
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<td>0%</td>
<td>0%</td>
<td>0%</td>
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</tr>
<tr>
<td></td>
<td>30%</td>
<td>30%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Analysis of impact (from Example 2)

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

3. **Stabilize loss experience**

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

**Beginning Assumptions (the “Without” columns):**

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

**Altered Assumptions (the “With” columns):**

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

---

1 Ceded balances are those balance sheet values arising from ceded reinsurance. In the above examples, they include ceded loss reserves and ceded unearned premiums. In a real-life example, they would also include reinsurance recoverables from amounts billed but not yet collected.
Once again only 10% of the additional losses (over and above “normal” losses) are paid by year-end, with the rest paid the following year. Note that the reinsurer does not begin paying until paid losses exceed 100% of premium, so the entire $225,000 of ceded loss is ceded reserve.

The only surplus change is due to the change in underwriting results.
### Example 3
DEF Insurance Company
Impact of Aggregate Excess Treaty

<table>
<thead>
<tr>
<th>Balance Sheet</th>
<th>Normal Losses</th>
<th>High Losses</th>
<th>Difference</th>
<th>Without</th>
<th>With</th>
<th>Difference</th>
<th>Without</th>
<th>With</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assets</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>(100)</td>
<td>2,480</td>
<td>2,380</td>
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<td>-</td>
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</tr>
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<tr>
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<td>(325)</td>
<td>125</td>
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<td>130</td>
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<td>(5)</td>
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<td>78</td>
<td>(105)</td>
<td>320</td>
<td>(200)</td>
<td>120</td>
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<td>1,000</td>
<td>-</td>
<td>1,000</td>
<td>1,000</td>
<td>-</td>
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<td>(50)</td>
<td>1,000</td>
<td>930</td>
<td>(70)</td>
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</tr>
<tr>
<td>Gross WP/Surplus</td>
<td>67%</td>
<td>71%</td>
<td>5%</td>
<td>100%</td>
<td>89%</td>
<td>-11%</td>
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<tr>
<td>Net WP/Surplus</td>
<td>67%</td>
<td>68%</td>
<td>1%</td>
<td>100%</td>
<td>83%</td>
<td>-17%</td>
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</tr>
<tr>
<td>Gross Loss Reserves/Surplus</td>
<td>50%</td>
<td>54%</td>
<td>4%</td>
<td>120%</td>
<td>107%</td>
<td>-13%</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Net Loss Reserves/Surplus</td>
<td>50%</td>
<td>54%</td>
<td>4%</td>
<td>120%</td>
<td>87%</td>
<td>-33%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ceded Reserves/Surplus</td>
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<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>20%</td>
<td>20%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Analysis of impact (from Example 3)**

- **Surplus** – The expected value of surplus is lower after buying reinsurance, but with less period-to-period variation. The reduction is caused by the expected net cost of reinsurance. Note that while the expected impact of surplus is a reduction, the impact from year to year may vary between reductions and increases as gross losses are lower or higher than expected.

- **Loss reserves** – Stabilizing loss experience net of reinsurance generally translates into stabilizing net of reinsurance loss reserves. Gross reserves reflect the full volatility of year-to-year results, but net reserves should be smaller and more stable. (They may also be easier to estimate, as the situations that cause loss experience to fluctuate may also cause claim liability estimation to be more difficult.)

- **Unearned Premiums** – Reduced on a net basis due to the purchase of reinsurance, unless (as in our example) the reinsurance is purchased with a single effective date and the accounting date being used is the reinsurance expiration date.

- **Leverage ratios** – These ratios on a net basis should be more stable but slightly higher (due to reduced surplus), assuming there is a positive net cost of the reinsurance.

- **Income statement** – Underwriting results over time would be expected to be lower, due to the net cost of the reinsurance, and investment income would be lower. But the underwriting results from year-to-year should be more stable.

4. **Provide surplus relief**

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

**Beginning Assumptions (the “Without” column):**

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

**Altered Assumptions (the “With” column):**

- XYZ buys reinsurance with a 50% quota share, in order to reduce its net premium to surplus and net reserves to surplus leverage ratios. This is a straight quota share, with 50% of premiums and losses ceded, with a ceding commission of 20% (consistent with the gross expense ratio).

- This is the only reinsurance purchased by XYZ.

- The altered assumptions once again reflect a steady state with consistent gross and ceded premium from year to year.

- The only surplus change is due to the change in underwriting and investment income during the year.
Example 4
XYZ Insurance Company
Impact of Quota Share Treaty

<table>
<thead>
<tr>
<th><strong>Balance Sheet</strong></th>
<th>Without</th>
<th>With</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assets</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bonds</td>
<td>1,575</td>
<td>943</td>
<td>(632)</td>
</tr>
<tr>
<td>Cash</td>
<td>75</td>
<td>75</td>
<td>-</td>
</tr>
<tr>
<td>Agents Balances</td>
<td>100</td>
<td>100</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>1,750</td>
<td>1,118</td>
<td>(632)</td>
</tr>
<tr>
<td><strong>Liabilities</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loss Reserves</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross</td>
<td>750</td>
<td>750</td>
<td>-</td>
</tr>
<tr>
<td>Ceded</td>
<td>0</td>
<td>375</td>
<td>375</td>
</tr>
<tr>
<td>Net</td>
<td>750</td>
<td>375</td>
<td>(375)</td>
</tr>
<tr>
<td>Unearned Premiums</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross</td>
<td>500</td>
<td>500</td>
<td>-</td>
</tr>
<tr>
<td>Ceded</td>
<td>0</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>Net</td>
<td>500</td>
<td>250</td>
<td>(250)</td>
</tr>
<tr>
<td>Ceded Agents Balances</td>
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<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Total</td>
<td>1,250</td>
<td>675</td>
<td>(575)</td>
</tr>
<tr>
<td><strong>Surplus</strong></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>500</td>
<td>443</td>
<td>(57)</td>
</tr>
</tbody>
</table>

**Income Statement**

| **Earned Premium** |         |      |            |
| Gross              | 1,000   | 1,000| -          |
| Ceded              | 0       | 500  | 500        |
| Net                | 1,000   | 500  | (500)      |

| **Incurred Losses** |         |      |            |
| Gross              | 750     | 750  | -          |
| Ceded              | 0       | 375  | 375        |
| Net                | 750     | 375  | (375)      |

| **Expenses**       | 200     | 100  | (100)      |
| **Underwriting Income** | 50 | 25 | (25) |
| **Investment Income** | 83 | 51 | (32) |
| **Total Income**   | 133     | 76   | (57)       |

| **Written Premiums** |         |      |            |
| Gross              | 1,000   | 1,000| -          |
| Ceded              | 0       | 500  | 500        |
| Net                | 1,000   | 500  | (500)      |

**Other Financial Statistics**

<table>
<thead>
<tr>
<th></th>
<th>Gross WP/ Surplus</th>
<th>Net WP/ Surplus</th>
<th>Net Loss Reserves/ Surplus</th>
<th>Ceded Reserves/ Surplus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross WP/ Surplus</td>
<td>200%</td>
<td>226%</td>
<td>150%</td>
<td>0%</td>
</tr>
<tr>
<td>Net WP/ Surplus</td>
<td>200%</td>
<td>113%</td>
<td>150%</td>
<td>141%</td>
</tr>
<tr>
<td>Gross Loss Reserves/Surplus</td>
<td>19%</td>
<td>150%</td>
<td>169%</td>
<td>141%</td>
</tr>
<tr>
<td>Net Loss Reserves/Surplus</td>
<td>-65%</td>
<td>150%</td>
<td>85%</td>
<td>141%</td>
</tr>
<tr>
<td>Ceded Reserves/Surplus</td>
<td>-87%</td>
<td>150%</td>
<td>141%</td>
<td>141%</td>
</tr>
</tbody>
</table>


**Analysis of impact (from Example 4)**

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

5. **Facilitate withdrawal from a market segment**

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

**Beginning Assumptions (the “Beginning Balance” and “Without” columns):**

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

**Altered Assumptions (the “With” column):**

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

*Note: This example assumes withdrawal from all business. These results would need to be combined with results from ongoing businesses to see the combined balance sheet and income statement impact.*
### Example 5

**XYZ Insurance Company**

**Impact of Prospective Reinsurance Treaty**

<table>
<thead>
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<th>Beginning Balances</th>
<th>Ending Balances</th>
<th>Ending Balances</th>
<th>Difference</th>
</tr>
</thead>
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<td><strong>Assets</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
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<td>1,690</td>
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<td>-</td>
<td>-</td>
</tr>
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<td><strong>Total</strong></td>
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<td>1,927</td>
<td>1,709</td>
<td>(218)</td>
</tr>
<tr>
<td><strong>Liabilities</strong></td>
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</tr>
<tr>
<td>Loss Reserves</td>
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<tr>
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<td>188</td>
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<td>(188)</td>
</tr>
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</tr>
<tr>
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<td>(188)</td>
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<tr>
<td>Incurred Losses</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross</td>
<td>375</td>
<td>375</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ceded</td>
<td>0</td>
<td>375</td>
<td>375</td>
<td>375</td>
</tr>
<tr>
<td>Net</td>
<td>375</td>
<td>-</td>
<td>(375)</td>
<td></td>
</tr>
<tr>
<td>Expenses</td>
<td>-</td>
<td>(100)</td>
<td>(100)</td>
<td></td>
</tr>
<tr>
<td>Underwriting Income</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>125</td>
<td>100</td>
<td>(25)</td>
<td></td>
</tr>
<tr>
<td>Investment Income</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>114</td>
<td>109</td>
<td>(5)</td>
<td></td>
</tr>
<tr>
<td>Total Income</td>
<td>239</td>
<td>209</td>
<td>(30)</td>
<td></td>
</tr>
<tr>
<td><strong>Written Premiums</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ceded</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Net</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Other Financial Statistics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross WP/Surplus</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Net WP/Surplus</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Gross Loss Reserves/Surplus</td>
<td>11%</td>
<td>11%</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Net Loss Reserves/Surplus</td>
<td>11%</td>
<td>0%</td>
<td>-11%</td>
<td></td>
</tr>
<tr>
<td>Ceded Reserves/Surplus</td>
<td>0%</td>
<td>11%</td>
<td>11%</td>
<td></td>
</tr>
</tbody>
</table>
Analysis of Impact (from Example 5)

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

6. **Provide underwriting guidance**

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

No numeric example will be provided for this situation. It is conceptually equivalent to Exhibit 1 wherein reinsurance creates new business opportunities for the insurer. The impact on surplus and income will depend on the profitability and volume (after reinsurance cessions) of the new business.
Please note the following citation will be added as soon as it becomes available.

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

Article in Risk Management and Insurance Review · November 2013
DOI: 10.1111/rmir.12012

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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

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.”\(^1\) 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.
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.

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. 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.

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*.

**Figure 2**

China’s Insurance Density and Penetration Over Time

Source: Authors’ calculations based on *China Insurance Yearbook* and *China Statistical Yearbook*. 
Development and Regulation of China’s Insurance Market

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
### Table 1
Concentration in China’s Life and Nonlife Insurance Markets

<table>
<thead>
<tr>
<th>Year</th>
<th>Insurance Companies</th>
<th>Provincial Subsidiaries</th>
<th>Branches</th>
<th>HHI of China’s Nonlife Insurance Market</th>
<th>HHI of China’s Life Insurance Market</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>36</td>
<td>–</td>
<td>–</td>
<td>5,700</td>
<td>4,150</td>
</tr>
<tr>
<td>2004</td>
<td>60</td>
<td>–</td>
<td>–</td>
<td>3,900</td>
<td>3,200</td>
</tr>
<tr>
<td>2007</td>
<td>102</td>
<td>941</td>
<td>57,191</td>
<td>2,400</td>
<td>2,400</td>
</tr>
<tr>
<td>2010</td>
<td>126</td>
<td>1,294</td>
<td>68,061</td>
<td>1,850</td>
<td>1,800</td>
</tr>
</tbody>
</table>

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

### Figure 4
Entry of Foreign Insurers Into China’s Life and Nonlife Insurance Markets

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).
The Structure of 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. 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, the first law put into place regarding the operation

---

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

Note 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
The Insurance Law and Its Modifications

<table>
<thead>
<tr>
<th></th>
<th>First Edition</th>
<th>First Modification</th>
<th>Second Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time of modification</td>
<td>June 1995</td>
<td>October 2002</td>
<td>February 2009</td>
</tr>
<tr>
<td>Time of coming into effect</td>
<td>October 1995</td>
<td>October 2002</td>
<td>October 2009</td>
</tr>
<tr>
<td>Chapters and provisions</td>
<td>8 chapters,</td>
<td>8 chapters,</td>
<td>8 chapters,</td>
</tr>
<tr>
<td></td>
<td>152 provisions</td>
<td>158 provisions</td>
<td>187 provisions</td>
</tr>
<tr>
<td>Provisions modified</td>
<td>33</td>
<td>145</td>
<td></td>
</tr>
<tr>
<td>Provisions added</td>
<td>6</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td>Provisions deleted or merged</td>
<td>2</td>
<td>19</td>
<td></td>
</tr>
</tbody>
</table>

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 contract, institutional arrangements among insurance market participants, and 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. 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 responsibilities 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

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

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
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.\textsuperscript{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.\textsuperscript{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.\textsuperscript{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.

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

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.

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16 A detailed list of specific rule changes over time is available from the authors.
TABLE 4
Investment Limitations in China and Other Countries, 2010

<table>
<thead>
<tr>
<th>Maximum Limit, %, Average Among All IAIS Reporting Jurisdictions</th>
<th>Maximum Limit, China (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life</td>
<td>Nonlife</td>
</tr>
<tr>
<td>Corporate bonds</td>
<td>37</td>
</tr>
<tr>
<td>Government bonds</td>
<td>72.8</td>
</tr>
<tr>
<td>Stock shares</td>
<td>26.9</td>
</tr>
<tr>
<td>Mortgages</td>
<td>30.8</td>
</tr>
<tr>
<td>Real estate</td>
<td>30.1</td>
</tr>
<tr>
<td>Loans</td>
<td>19.1</td>
</tr>
<tr>
<td>Cash</td>
<td>26.7</td>
</tr>
<tr>
<td>Derivatives—traded</td>
<td>13.6</td>
</tr>
<tr>
<td>Derivatives—OTC</td>
<td>5</td>
</tr>
<tr>
<td>Hedge funds</td>
<td>30.7</td>
</tr>
<tr>
<td>Unit trust</td>
<td>32.4</td>
</tr>
</tbody>
</table>

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.” 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.

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

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

Office of the State Council, Ministry of Finance, the People’s Bank of China, and others. 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 policies. 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. 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; 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 2011 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

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

\textsuperscript{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.

\textsuperscript{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.\textsuperscript{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.\textsuperscript{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,\textsuperscript{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.\textsuperscript{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.\textsuperscript{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

\begin{footnotesize}
\begin{enumerate}
\item See http://www.circ.gov.cn/web/site47/tab4339/.
\item Li and Chongmiao (2009) discuss nine areas in which the law increases consumer protections.
\end{enumerate}
\end{footnotesize}
insurance companies must release information to the public were identified.\textsuperscript{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.\textsuperscript{33} The discriminatory regulation is at least one of the causes of this situation.

\textbf{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.


\textsuperscript{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).
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,
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 “top-down” 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. 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

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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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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. GAAP\(^1\)).

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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 either:

(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.

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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:

In nearly all situations the LFIC is the same between the PAA and BBA. 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 flows and/or not accreting interest under the PAA if there is no significant financing component, 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.

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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
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

<table>
<thead>
<tr>
<th>Inception of the group</th>
<th>Base case</th>
<th>Increase in expected future claims</th>
<th>Decrease in expected future claims</th>
<th>Large increase in expected future claims</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAA</td>
<td>BBA</td>
<td>PAA</td>
<td>BBA</td>
<td>PAA</td>
</tr>
<tr>
<td>FCF (inc. risk adjustment)</td>
<td>CSM</td>
<td>LFRC (excl. loss component)</td>
<td>Loss component</td>
<td></td>
</tr>
</tbody>
</table>

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).
2. 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.
1. At inception the PAA and BBA give the same LFRC (this will always be the case).

2. If the yield curve is exactly as expected at the end of the first reporting period then the PAA and BBA will produce the same LFRC (the “Base Case”).

3. 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 fulfillment 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).

---

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 group\(^{11}\) 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 risk\(^{12}\) (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.

---

### Example 3: BBA and PAA LFRC arising from different earnings patterns

**LFRC across different earnings profiles**

<table>
<thead>
<tr>
<th></th>
<th>PAA Inception of the group</th>
<th>BBA Base case</th>
<th>PAA PAA has a faster earnings pattern</th>
<th>BBA PAA has a slower earnings pattern</th>
</tr>
</thead>
</table>

At the end of the first reporting period under various circumstances

- **FCF (inc. risk adjustment)**
- **CSM**
- **LFRC (excl. 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).
2. When the earnings patterns are in line for both BBA and PAA, then the PAA and BBA will give the same\(^{10}\) LFRC (the “Base Case”).
3. 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.

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.

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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.

11 IFRS 17.B119

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 BBA\textsuperscript{13}.

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 example\textsuperscript{14}:

- 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.

\textsuperscript{13} IFRS 17.53(a)
\textsuperscript{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

Model the group under both the PAA and BBA

Determine a range of scenarios that could reasonably occur

Compare the largest difference in LFRC between the PAA and BBA over all the scenarios tested with a certain percentage of the selected metric (i.e., determined threshold).

Is the difference greater than determined threshold?

Two approaches are not materially different (group can be modelled under the PAA)

No

Two approaches are materially different (group does not qualify for the PAA)

Yes
4 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:

1. Process to input the data from the main policy data systems. These data items will include, for example, premiums, acquisition costs, claims and expense cash flows, earnings profiles, coverage units and interest rates.

2. Model the LFRC for the base case and the shocked scenarios under the PAA and BBA.

3. Allow the user to set the parameters for the shocked scenarios and the materiality thresholds.

4. Apply the shocks at any future period specified by the user.

This model would require an initial cost to set up the process and integrate it with the data systems. There would then be an ongoing running cost for the process to be carried out at each reporting period. The cost of setting up the model and the process would be expected to be minimal when compared with implementing the BBA at a full scale. The continued running cost should be small.

If based on the PAA eligibility assessment, some groups are not eligible for the PAA, then the BBA will need to be adopted for these groups. This would have a significant operational impact since when compared to the PAA, the BBA is more costly to implement and less aligned to the current accounting and reporting practices applied to non-life insurance contracts under IFRS 4.
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EYG no. 008978-20Gbl
ED None

EY-000128931.indd (UK) 02/21.
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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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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
- **HTM**: 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
- **PAA**: 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 Good Life Insurance (International) Limited and variable fee approach (VFA) in IFRS 17.

We draw attention to the disclosures in Note 11 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 EY’s Online International GAAP® Disclosure Checklist, and further commentary on IFRS 17 is available in EY’s Applying IFRS 17 - A closer look at the new Insurance Contracts standard. 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 11).

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 2.2.5.5
  - Significant estimates and judgements - Note 5.1.1
  - Detailed disclosures required by IFRS 17 included in the following notes (shaded for reference):
    - Insurance service expense - Note 6
    - Personal accident insurance - Note 11.1.1
    - Marine Insurance - Note 11.1.2
    - Liability reinsurance issued - Note 11.1.4

- Accounting for a loss-recovery component on initial recognition of an onerous group of underlying insurance contracts - refer to:
  - Accounting policies - Notes 2.2.5.2 and 2.2.6.3
  - Detailed disclosures required by IFRS 17 included in (shaded for reference):
    - Marine Insurance - Note 11.2.1
Statement of profit or loss and other comprehensive income

For the year ended 31 December 2023

<table>
<thead>
<tr>
<th>In €000</th>
<th>Notes</th>
<th>2023</th>
<th>2022 restated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insurance revenue</td>
<td></td>
<td>10,829</td>
<td>10,727</td>
</tr>
<tr>
<td>Insurance service expense</td>
<td></td>
<td>(9,421)</td>
<td>(9,643)</td>
</tr>
<tr>
<td><strong>Insurance service result before reinsurance contracts held</strong></td>
<td></td>
<td>1,408</td>
<td>1,084</td>
</tr>
<tr>
<td>Allocation of reinsurance premiums</td>
<td></td>
<td>(633)</td>
<td>(966)</td>
</tr>
<tr>
<td>Amounts recoverable from reinsurers for incurred claims</td>
<td></td>
<td>625</td>
<td>934</td>
</tr>
<tr>
<td><strong>Net expense from reinsurance contracts held</strong></td>
<td></td>
<td>(8)</td>
<td>(32)</td>
</tr>
<tr>
<td>Interest revenue calculated using the effective interest method</td>
<td></td>
<td>781</td>
<td>644</td>
</tr>
<tr>
<td>Other interest and similar income</td>
<td></td>
<td>358</td>
<td>334</td>
</tr>
<tr>
<td>Net fair value gains/(losses) on financial assets at fair value through profit or loss</td>
<td></td>
<td>104</td>
<td>(14)</td>
</tr>
<tr>
<td>Net fair value gains on derecognition of financial assets measured at fair value through other comprehensive income</td>
<td></td>
<td>6</td>
<td>—</td>
</tr>
<tr>
<td>Impairment loss on financial assets</td>
<td></td>
<td>(5)</td>
<td>(2)</td>
</tr>
<tr>
<td>Net foreign exchange income/(expense)</td>
<td></td>
<td>8</td>
<td>(35)</td>
</tr>
<tr>
<td><strong>Total investment income</strong></td>
<td></td>
<td>1,252</td>
<td>927</td>
</tr>
<tr>
<td>Insurance finance expenses for insurance contracts issued</td>
<td></td>
<td>(265)</td>
<td>(237)</td>
</tr>
<tr>
<td>Reinsurance finance income for reinsurance contracts held</td>
<td></td>
<td>36</td>
<td>9</td>
</tr>
<tr>
<td><strong>Net insurance financial result</strong></td>
<td></td>
<td>(229)</td>
<td>(228)</td>
</tr>
<tr>
<td>Other income and expense</td>
<td></td>
<td>(210)</td>
<td>(191)</td>
</tr>
<tr>
<td><strong>Profit before tax</strong></td>
<td></td>
<td>2,213</td>
<td>1,560</td>
</tr>
<tr>
<td>Income tax expense</td>
<td></td>
<td>(231)</td>
<td>(172)</td>
</tr>
<tr>
<td><strong>Profit for the year</strong></td>
<td></td>
<td>1,982</td>
<td>1,388</td>
</tr>
<tr>
<td><strong>Other comprehensive income</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OCI to be reclassified to profit or loss in subsequent periods</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change in fair value of financial assets</td>
<td></td>
<td>179</td>
<td>(35)</td>
</tr>
<tr>
<td>Amount reclassified to profit or loss</td>
<td></td>
<td>(1)</td>
<td>2</td>
</tr>
<tr>
<td>Debt instruments at fair value through other comprehensive income</td>
<td></td>
<td>178</td>
<td>(33)</td>
</tr>
<tr>
<td>Insurance finance (expense)/income for insurance contracts issued</td>
<td></td>
<td>(13)</td>
<td>4</td>
</tr>
<tr>
<td><strong>Net insurance financial result</strong></td>
<td></td>
<td>(13)</td>
<td>4</td>
</tr>
<tr>
<td>Income tax relating to items that may be reclassified</td>
<td></td>
<td>(33)</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total other comprehensive income</strong></td>
<td></td>
<td>132</td>
<td>(23)</td>
</tr>
<tr>
<td><strong>Total Comprehensive income</strong></td>
<td></td>
<td>2,114</td>
<td>1,365</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Notes</th>
<th>As at 31 December</th>
<th>As at 1 January</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2023</td>
<td>2022</td>
</tr>
<tr>
<td></td>
<td>restated</td>
<td>restated</td>
</tr>
<tr>
<td><strong>Assets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2,276</td>
<td>1,888</td>
</tr>
<tr>
<td>8</td>
<td>6,597</td>
<td>5,452</td>
</tr>
<tr>
<td>9</td>
<td>11,356</td>
<td>10,688</td>
</tr>
<tr>
<td>10</td>
<td>1,036</td>
<td>987</td>
</tr>
<tr>
<td>11</td>
<td>35</td>
<td>49</td>
</tr>
<tr>
<td>11</td>
<td>808</td>
<td>1,408</td>
</tr>
<tr>
<td><strong>Total assets</strong></td>
<td>22,108</td>
<td>20,472</td>
</tr>
<tr>
<td><strong>Liabilities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>140</td>
<td>175</td>
</tr>
<tr>
<td>11</td>
<td>13,004</td>
<td>13,589</td>
</tr>
<tr>
<td>11</td>
<td>163</td>
<td>41</td>
</tr>
<tr>
<td>11</td>
<td>210</td>
<td>190</td>
</tr>
<tr>
<td><strong>Total liabilities</strong></td>
<td>13,517</td>
<td>13,995</td>
</tr>
<tr>
<td><strong>Equity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>150</td>
<td>150</td>
<td>150</td>
</tr>
<tr>
<td>8,177</td>
<td>6,195</td>
<td>4,807</td>
</tr>
<tr>
<td>268</td>
<td>126</td>
<td>152</td>
</tr>
<tr>
<td>(4)</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total equity</strong></td>
<td>8,591</td>
<td>6,477</td>
</tr>
<tr>
<td><strong>Total liabilities and equity</strong></td>
<td>22,108</td>
<td>20,472</td>
</tr>
</tbody>
</table>

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 3.2.1.

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

<table>
<thead>
<tr>
<th>In €000</th>
<th>Notes</th>
<th>Issued capital</th>
<th>Fair value reserve</th>
<th>Insurance/reinsurance finance reserve</th>
<th>Retained Earnings</th>
<th>Total equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>At 31 December 2021, as previously reported</td>
<td></td>
<td>150</td>
<td>114</td>
<td>–</td>
<td>5,298</td>
<td>5,562</td>
</tr>
<tr>
<td>Impact of initial application of IFRS 17</td>
<td>1.1.1.3</td>
<td>–</td>
<td>–</td>
<td>3</td>
<td>(438)</td>
<td>(435)</td>
</tr>
<tr>
<td>Impact of initial application of IFRS 9</td>
<td>1.1.3</td>
<td>–</td>
<td>38</td>
<td>–</td>
<td>(53)</td>
<td>(15)</td>
</tr>
<tr>
<td>Restated balance as at 1 January 2022</td>
<td></td>
<td>150</td>
<td>152</td>
<td>3</td>
<td>4,807</td>
<td>5,112</td>
</tr>
</tbody>
</table>

- Profit for the year: 1,388 (AS 1.106(d)(i))
- Other comprehensive income for the year: 142 (10) (AS 1.106(d)(ii))
- Total comprehensive income: 1,982 (132) (AS 1.106(d)(ii))

| Restated balance as at 31 December 2022 |       | 150            | 126                | 6                                    | 6,195            | 6,477       |

- Profit for the year: 1,982 (AS 1.106(d)(i))
- Other comprehensive income for the year: 142 (10) (AS 1.106(d)(ii))
- Total comprehensive income: 1,982 (132) (AS 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 *Good Insurance (2017) publication*. 
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.

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 is made, then the IFRS 17 disclosures need to be provided separately for each unit of aggregation.

1. Changes in accounting policies and disclosures
1.1. New and amended standards and interpretations
In these financial statements, the Company has applied IFRS 17 and IFRS 9 for the first time. The Company has not early adopted any other standard, interpretation or amendment that has been issued but is not yet effective.

1.1.1. IFRS 17 Insurance Contracts
IFRS 17 replaces IFRS 4 Insurance Contracts for annual periods on or after 1 January 2023.

The Company has restated comparative information for 2022 applying the transitional provisions in Appendix C to IFRS 17. The nature of the changes in accounting policies can be summarised, as follows:

1.1.1.1. Changes to classification and measurement
The adoption of IFRS 17 did not change the classification of the Company’s insurance contracts.

The Company was previously permitted under IFRS 4 to continue accounting using its previous (Euroland GAAP) accounting policies. However, IFRS 17 establishes specific principles for the recognition and measurement of insurance contracts issued and reinsurance contracts held by the Company.

Under IFRS 17, the Company’s insurance contracts issued and reinsurance contracts held are all eligible to be measured by the PAA. The PAA simplifies the measurement of insurance contracts in comparison with the general model in IFRS 17.

The measurement principles of the PAA differ from the ‘earned premium approach’ used by the Company under IFRS 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
- 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
- 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)
- 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.
- Measurement of the asset for remaining coverage (reflecting reinsurance premiums paid for reinsurance 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.

11 Good General Insurance (International) Limited - Premium allocation approach
1.1. New and amended standards and interpretations (continued)

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. Changes to presentation and disclosure

For presentation in the statement of financial position, the Company aggregates insurance and reinsurance contracts issued and reinsurance contracts held, respectively and presents separately:

- 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 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
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
- 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

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.C3(a) states that an entity is not required to present the quantitative information required by paragraph 28(f) of IAS 8 Accounting Policies, Changes in Accounting Estimates and Errors. 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.

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:

(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.

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.

(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:

(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.
1.1. New and amended standards and interpretations (continued)

1.1.2. IFRS 9 Financial Instruments

IFRS 9 replaced IAS 39 Financial Instruments: Recognition and Measurement 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 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 1.1.3.

Commentary

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.

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.

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
- 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)
- Debt instruments at amortised cost

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.
1.1. New and amended standards and interpretations (continued)

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 1.1.3. Detailed qualitative and quantitative information about the ECL calculations, such as the assumptions and inputs used, are set out in Notes 2.3.6.1 and 5.2.1.

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.
1.1. New and amended standards and interpretations (continued)

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:

<table>
<thead>
<tr>
<th>Financial assets</th>
<th>IAS 39 measurement</th>
<th>Re-measurement</th>
<th>IFRS 9</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Category</td>
<td>Amount</td>
<td>classification</td>
</tr>
<tr>
<td>Cash and balances with banks</td>
<td>L&amp;R $1</td>
<td>1,888</td>
<td>-</td>
</tr>
<tr>
<td>Debt instruments at amortised cost</td>
<td>N/A</td>
<td>1,001</td>
<td>(2)</td>
</tr>
<tr>
<td>From: Financial investments - AFS</td>
<td>A</td>
<td>1,001</td>
<td>(2)</td>
</tr>
<tr>
<td></td>
<td>L&amp;R</td>
<td>1,888</td>
<td>1,001</td>
</tr>
<tr>
<td>Financial investments - AFS $3</td>
<td>11,689</td>
<td>(11,689)</td>
<td>-</td>
</tr>
<tr>
<td>To: Debt instruments at FVOCI</td>
<td>B</td>
<td>(10,688)</td>
<td>(61)</td>
</tr>
<tr>
<td>To: Debt instruments at amortised cost</td>
<td>A</td>
<td>(1,001)</td>
<td>(61)</td>
</tr>
<tr>
<td></td>
<td>AFS</td>
<td>11,689</td>
<td>(11,689)</td>
</tr>
<tr>
<td>Debt instruments at fair value through OCI</td>
<td>N/A</td>
<td>10,688</td>
<td>10,688</td>
</tr>
<tr>
<td>From: Financial Investments - AFS</td>
<td>B</td>
<td>10,688</td>
<td>-</td>
</tr>
<tr>
<td>Financial assets at fair value through profit or loss (designated)</td>
<td>C</td>
<td>5,452</td>
<td>(5,452)</td>
</tr>
<tr>
<td>Financial assets at fair value through profit or loss (mandatory)</td>
<td>N/A</td>
<td>5,452</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>FVPL</td>
<td>5,452</td>
<td>-</td>
</tr>
<tr>
<td>Non-financial assets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deferred tax assets</td>
<td>D</td>
<td>243</td>
<td>-</td>
</tr>
<tr>
<td>Total assets</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 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.

<table>
<thead>
<tr>
<th>In €000</th>
<th>Loan loss provision under IAS 39 at 31 December 2022</th>
<th>Re-measurement</th>
<th>ECLs under IFRS 9 at 1 January 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impairment allowance for Available-for-sale debt investment securities per IAS 39/Debt instruments at amortised cost under IFRS 9:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Available-for-sale debt investment securities per IAS 39/debt financial assets at FVOCI under IFRS 9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impairment allowance</td>
<td>–</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Impairment allowance</td>
<td>–</td>
<td>61</td>
<td>61</td>
</tr>
<tr>
<td>Impairment allowance</td>
<td>–</td>
<td>63</td>
<td>63</td>
</tr>
</tbody>
</table>

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.
1.1. **New and amended standards and interpretations (continued)**

A reconciliation between the carrying amounts under IAS 39 and the balances reported under IFRS 9 as of 1 January 2022 is, as follows:

<table>
<thead>
<tr>
<th>In €000 Financial assets</th>
<th>IAS 39 measurement</th>
<th>Re-measurement</th>
<th>IFRS 9</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Category</td>
<td>Amount</td>
<td>ECL</td>
</tr>
<tr>
<td>Cash and balances with banks</td>
<td>L&amp;R¹</td>
<td>2,700</td>
<td>-</td>
</tr>
<tr>
<td>Debt instruments at amortised cost</td>
<td>N/A</td>
<td>953</td>
<td>(2)</td>
</tr>
<tr>
<td>From: Financial investments - AFS</td>
<td></td>
<td>953</td>
<td>(2)</td>
</tr>
<tr>
<td></td>
<td>L&amp;R</td>
<td>2,700</td>
<td>953</td>
</tr>
<tr>
<td>Financial investments - AFS³</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To: Debt instruments at FVOCI</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To: Debt instruments at amortised cost</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>AFS</td>
<td>10,479</td>
<td>(10,479)</td>
</tr>
<tr>
<td>Debt instruments at fair value through OCI</td>
<td>N/A</td>
<td>9,526</td>
<td>(59)</td>
</tr>
<tr>
<td>From: Financial Investments - AFS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>N/A</td>
<td>9,526</td>
<td>(59)</td>
</tr>
<tr>
<td>Financial assets at fair value through profit or loss (designated)</td>
<td>FVPL (designated)</td>
<td>4,517</td>
<td>(4,517)</td>
</tr>
<tr>
<td>Financial assets at fair value through profit or loss (mandatory)</td>
<td>N/A</td>
<td>4,517</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>FVPL</td>
<td>4,517</td>
<td>-</td>
</tr>
<tr>
<td>Non-financial assets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deferred tax assets</td>
<td></td>
<td>237</td>
<td>-</td>
</tr>
<tr>
<td>Total assets</td>
<td></td>
<td>17,933</td>
<td>-</td>
</tr>
</tbody>
</table>

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.
### Notes to the Financial Statements

#### 1.1. New and amended standards and interpretations (continued)

The impact of transition to IFRS 9 on reserves and retained earnings is, as follows:

<table>
<thead>
<tr>
<th>Description</th>
<th>In €000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fair value reserve</strong></td>
<td></td>
</tr>
<tr>
<td>Closing balance under IAS 39 (31 December 2021)</td>
<td>114</td>
</tr>
<tr>
<td>Reclassification of debt instruments from available-for-sale to amortised cost</td>
<td>(11)</td>
</tr>
<tr>
<td>Adjustment for recognition of ECL under IFRS 9 for debt financial assets at FVOCI</td>
<td>59</td>
</tr>
<tr>
<td>Deferred tax in relation to IFRS 9 application</td>
<td>(10)</td>
</tr>
<tr>
<td><strong>Opening balance under IFRS 9 (1 January 2022)</strong></td>
<td>152</td>
</tr>
<tr>
<td><strong>Retained earnings</strong></td>
<td></td>
</tr>
<tr>
<td>Closing balance under IAS 39 (31 December 2021)</td>
<td>5,298</td>
</tr>
<tr>
<td>Impact of initial application of IFRS 17</td>
<td>(547)</td>
</tr>
<tr>
<td>Deferred tax in relation to IFRS 17 application</td>
<td>109</td>
</tr>
<tr>
<td>Recognition of IFRS 9 ECLs for debt instruments measured at amortised cost and at FVOCI (see above)</td>
<td>(61)</td>
</tr>
<tr>
<td>Deferred tax in relation to IFRS 9 application</td>
<td>8</td>
</tr>
<tr>
<td><strong>Opening balance under IFRS 9 and IFRS 17 (1 January 2022)</strong></td>
<td>4,807</td>
</tr>
<tr>
<td><strong>Total change in equity (after tax) due to the application of new standards</strong></td>
<td></td>
</tr>
<tr>
<td>Fair value reserve</td>
<td>38</td>
</tr>
<tr>
<td>Retained earnings</td>
<td>(53)</td>
</tr>
<tr>
<td><strong>Total change in equity due to the application of IFRS 9</strong></td>
<td>(15)</td>
</tr>
<tr>
<td>Insurance/ reinsurance finance reserve</td>
<td>3</td>
</tr>
<tr>
<td>Retained earnings</td>
<td>(438)</td>
</tr>
<tr>
<td><strong>Total change in equity due to the application of IFRS 17</strong></td>
<td>(435)</td>
</tr>
</tbody>
</table>

#### 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 a specified uncertain future event (the insured event) adversely affects the policyholder’.

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.

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 that:

- An insurer should consider the time value of money in assessing whether the additional benefits payable in any scenario are significant
- 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
- If a reinsurance contract does not expose the insurer 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 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., 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.

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 amount increases, even if its nominal value is fixed.

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. 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 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 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.
Notes to the Financial Statements

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 identifies a contract as the smallest 'unit', i.e., the lowest common denominator. However, 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 other purposes (i.e., legal or management). IFRS 17 also requires that no group for level of aggregation 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 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 by year of issue and profitability for recognition and measurement purposes. Hence, within each year of issue, 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)
2.2. Insurance and reinsurance contracts accounting treatment (continued)

The profitability of groups of contracts is assessed by actuarial valuation models that take into consideration existing and new business. The Company assumes that no contracts in the portfolio are onerous at initial recognition unless facts and circumstances indicate otherwise. For contracts that are not onerous, the Company assesses, at initial recognition, that there is no significant possibility of becoming onerous subsequently by assessing the likelihood of changes in applicable facts and circumstances. The Company considers facts and circumstances to identify whether a group of contracts are onerous based on:

- Pricing information
- Results of similar contracts it has recognised
- Environmental factors, e.g., a change in market experience or regulations

The Company divides portfolios of reinsurance contracts held applying the same principles set out above, except that the references to onerous contracts refer to contracts on which there is a net gain on initial recognition. For some groups of reinsurance contracts held, a group can comprise a single contract.

2.2.3. Recognition

The Company recognises groups of insurance contracts it issues from the earliest of the following:

- 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 Company recognises a group of reinsurance contracts held it has entered into from the earlier of the following:

- 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.

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 Company adds new contracts to the group in the reporting period in which that contract meets one of the criteria set out above.

Commentary:

The issue date of a contract is when an entity has a contractual obligation to accept risk. The issue 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 to which the PAA applies are onerous. The recognition requirements for reinsurance contracts held that provide proportionate coverage are intended to simplify recognition for proportionate reinsurance contracts held. Circumstances in which the first underlying attaching 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.
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 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

<table>
<thead>
<tr>
<th>IFRS 17 Options</th>
<th>Adopted approach</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Premium Allocation Approach (PAA) Eligibility</strong></td>
<td>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.</td>
</tr>
<tr>
<td>Insurance acquisition cash flows for insurance contracts issued</td>
<td>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.</td>
</tr>
<tr>
<td>Liability for Remaining Coverage (LFRC), adjusted for financial risk and time value of money</td>
<td>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.</td>
</tr>
<tr>
<td>Liability for Incurred Claims, (LFIC) adjusted for time value of money</td>
<td>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.</td>
</tr>
<tr>
<td>Insurance finance income and expense</td>
<td>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.</td>
</tr>
</tbody>
</table>

### 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

The Company applies the premium allocation approach (PAA) to all the insurance contracts that it issues and reinsurance contracts that it holds, as:

- The coverage period of each contract in the group is one year or less, including insurance contract services arising from all premiums within the contract boundary (refer to 2.2.4)

Or

- For contracts longer than one year, the Company has modelled possible future scenarios and reasonably expects that the measurement of the liability for remaining coverage for the group containing those contracts under the PAA does not differ materially from the measurement that would be produced applying the general model. In assessing materiality, the Company has also considered qualitative factors such as the nature of the risk and types of its lines of business.

The Company does not apply the PAA if, at the inception of the group of contracts, it 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:

- 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

For a group of contracts that is not onerous at initial recognition, the Company measures the liability for remaining coverage as:

- The premiums, if any, received at initial recognition
- Minus any insurance acquisition cash flows at that date, with the exception of contracts which are one year or less where this is expensed,
- Plus or minus any amount arising from the derecognition at that date of the asset recognised for insurance acquisition cash flows and
- Any other asset or liability previously recognised for cash flows related to the group of contracts that the Company pays or receives before the group of insurance contracts is recognised.

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 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 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).
Notes to the Financial Statements

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.

Where 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 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 contracts (issued or expected to be issued) that are directly attributable to the portfolio of insurance contracts to which the group belongs.

With the exception of the property insurance product line, for which the Company chooses to expense insurance 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 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 11.

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.

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:

- The rights and obligations relating to the contract are extinguished (i.e., discharged, cancelled or expired)

Or

- 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 contra 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 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 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.

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.

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.

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 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 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 indicate otherwise. Where this is not the case, and if at any time during the coverage period, the facts and 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.
Notes to the Financial Statements

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 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 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 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 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 Note X). Except for financial assets and financial liabilities recorded at FVPL, transaction costs are added to this amount.

2.3.2. Measurement categories
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:

- 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 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 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 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)
Notes to the Financial Statements

2.3.2.1. The SPPI test

As a second step of its classification process the Company assesses the contractual terms to identify whether they meet the SPPI test.

'Principal' for the purpose of this test is defined as the fair value of the financial asset at initial recognition and may change over the life of the financial asset (for example, if there are repayments of principal or amortisation of the premium/discount).

The most significant elements of interest within a debt arrangement are typically the consideration for the time value of money and credit risk. To make the SPPI assessment, the Company applies judgement and considers relevant factors such as the currency in which the financial asset is denominated, and the period for which the interest rate is set.

2.3.2.2. Debt instruments measured at fair value through other comprehensive income

The Company applies the new category under IFRS 9 for debt instruments measured at FVOCI when both of the following conditions are met:

- 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

These instruments largely comprise debt instruments that had previously been classified as available-for-sale under IAS 39. Debt instruments in this category are those that are intended to be held to collect contractual cash flows and which may be sold in response to needs for liquidity or in response to changes in market conditions.

2.3.2.3. Financial assets measured at fair value through profit or loss

Financial assets in this category are those that are managed in a fair value business model, or that have been designated by management upon initial recognition, or are mandatorily required to be measured at fair value under IFRS 9. This category includes debt instruments whose cash flow characteristics fail the SPPI criterion or are not held within a business model whose objective is either to collect contractual cash flows, or both to collect contractual cash flows and sell.

2.3.3. Subsequent measurement

2.3.3.1. Debt instruments at amortised cost

After initial measurement, debt instruments are measured at amortised cost, using the effective interest rate (EIR) method, less allowance for impairment. Amortised cost is calculated by taking into account any discount or premium on acquisition and fee or costs that are an integral part of the EIR. ECLs are recognised in the statement of profit or loss when the investments are impaired.

2.3.3.2. Debt instruments at fair value through other comprehensive income

FVOCI debt instruments are subsequently measured at fair value with gains and losses arising due to changes in fair value recognised in OCI. Interest income and foreign exchange gains and losses are recognised in profit or loss in the same manner as for financial assets measured at amortised cost as explained in Note 2.4.1. The ECL calculation for debt instruments at FVOCI is explained in Note 2.3.6.2. Where the Company holds more than one investment in the same security, they are deemed to be disposed of on a first-in first-out basis. On derecognition, cumulative gains or losses previously recognised in OCI are reclassified from OCI to profit or loss.

2.3.3.3. Financial assets at fair value through profit or loss

Financial assets at FVPL are recorded in the statement of financial position at fair value. Changes in fair value are recorded in profit or loss. Interest earned on assets mandatorily required to be measured at FVPL is recorded using contractual interest rate, as explained in Note 2.4.2. Dividend income from equity instruments measured at FVPL is recorded in profit or loss as other operating income when the right to the payment has 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.

IFRS 9.4.4.2
IFRS 9.B4.4.1

2.3.5. Derecognition

2.3.5.1. Derecognition other than for substantial modification

A financial asset (or, where applicable, a part of a financial asset or part of a group of similar financial assets) is derecognised when:

- The rights to receive cash flows from the asset have expired

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 Company considers control to be transferred if and only if, the transferee has the practical ability to sell the asset in its entirety to an unrelated third party and is able to exercise that ability unilaterally and without imposing additional restrictions on the transfer.

When the Company has neither transferred nor retained substantially all of the risks and rewards and has retained control of the asset, the asset continues to be recognised only to the extent of the Company’s continuing involvement, in which case, the Company also recognises an associated liability. The transferred asset and the associated liability are measured on a basis that reflects the rights and obligations that the Company has retained.

Continuing involvement that takes the form of a guarantee over the transferred asset is measured at the lower of the original carrying amount of the asset and the maximum amount of consideration the Company could be required to pay.

IFRS 9.3.2.2
IFRS 9.3.2.3(a)
IFRS 9.3.2.3,(b)
IFRS 9.3.2.6
IFRS 9.3.2.9
IFRS 9.3.2.15
IFRS 9.3.2.16(a)

2.3.5.2. Derecognition due to substantial modification of terms and conditions

The Company derecognises a financial asset when the terms and conditions have been renegotiated to the extent that, substantially, it becomes a new instrument, with the difference recognised as a derecognition gain or loss. In the case of debt instruments at amortised cost, the newly recognised loans are classified as Stage 1 for ECL measurement purposes.

When assessing whether or not to derecognise an instrument, amongst others, the Company considers the following 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 modification does not result in cash flows that are substantially different, the modification does not result in derecognition. Based on the change in cash flows discounted at the original EIR, the Company records a modification gain or loss.

IFRS 9.5.4.3
IFRS 9.B5.5.25-26
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.

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 Probability of Default 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.
- **EAD** The Exposure at Default 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.
### 2.3 Financial assets (continued)

The Company allocates its assets subject to ECL calculations to one of these categories, determined as follows:

- **12mECL**
  
  The 12mECL is calculated as the portion of long term ECLs (LTECLs) that represent the 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.

- **LTECL**
  
  When an instrument has shown a significant increase in credit risk since origination, 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.

- **Impairment**
  
  For debt instruments considered credit-impaired, the Company recognises the lifetime expected credit losses for these instruments. The method is similar to that for LTECL assets, with the PD set at 100%.

#### 2.3.6.2. Debt instruments measured at fair value through other comprehensive income

The ECLs for debt instruments measured at FVOCI do not reduce the carrying amount of these financial assets 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, 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.
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 FVOCI 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.

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.

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.

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.

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 interest income calculated using the effective interest method the Company only includes interest on financial instruments at amortised cost or FVOCI.

Other interest income 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:

<table>
<thead>
<tr>
<th>In €000</th>
<th>2023</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Insurance</td>
<td>Reinsurance</td>
</tr>
<tr>
<td>Personal accident insurance</td>
<td>(1,099)</td>
<td>7,346</td>
</tr>
<tr>
<td>Marine insurance</td>
<td>2,887</td>
<td>(808)</td>
</tr>
<tr>
<td>Property insurance</td>
<td>998</td>
<td>-</td>
</tr>
<tr>
<td>Liability reinsurance issued</td>
<td>1,007</td>
<td>-</td>
</tr>
<tr>
<td>Total net insurance contracts</td>
<td>12,969</td>
<td>(808)</td>
</tr>
</tbody>
</table>
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:

<table>
<thead>
<tr>
<th></th>
<th>2023</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Personal insurance</td>
<td>Marine insurance</td>
</tr>
<tr>
<td><strong>Euroland</strong></td>
<td>5,079</td>
<td>3,022</td>
</tr>
<tr>
<td>Contracts issued</td>
<td>5,079</td>
<td>3,224</td>
</tr>
<tr>
<td>Reinsurance held</td>
<td>–</td>
<td>(202)</td>
</tr>
<tr>
<td><strong>United States</strong></td>
<td>–</td>
<td>158</td>
</tr>
<tr>
<td>Contracts issued</td>
<td>–</td>
<td>764</td>
</tr>
<tr>
<td>Reinsurance held</td>
<td>–</td>
<td>(606)</td>
</tr>
<tr>
<td><strong>Total net insurance contracts</strong></td>
<td>5,079</td>
<td>3,180</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2023</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Personal insurance</td>
<td>Marine insurance</td>
</tr>
<tr>
<td><strong>Euroland</strong></td>
<td>6,324</td>
<td>2,175</td>
</tr>
<tr>
<td>Contracts issued</td>
<td>6,324</td>
<td>2,622</td>
</tr>
<tr>
<td>Reinsurance held</td>
<td>–</td>
<td>(447)</td>
</tr>
<tr>
<td><strong>United States</strong></td>
<td>–</td>
<td>247</td>
</tr>
<tr>
<td>Contracts issued</td>
<td>–</td>
<td>1,208</td>
</tr>
<tr>
<td>Reinsurance held</td>
<td>–</td>
<td>(961)</td>
</tr>
<tr>
<td><strong>Total net insurance contracts</strong></td>
<td>6,324</td>
<td>2,422</td>
</tr>
</tbody>
</table>
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 5.1.2) 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.

<table>
<thead>
<tr>
<th>In €000</th>
<th>Change in assumptions</th>
<th>Impact on profit before tax gross of reinsurance</th>
<th>Impact on profit before tax net of reinsurance</th>
<th>Impact on equity gross of reinsurance</th>
<th>Impact on equity net of reinsurance</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weighted average term to settlement</td>
<td>+ 10 %</td>
<td>40</td>
<td>38</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>Expected loss</td>
<td>+ 10 %</td>
<td>(712)</td>
<td>(718)</td>
<td>(704)</td>
<td>(78)</td>
</tr>
<tr>
<td>Inflation rate</td>
<td>+ 1 %</td>
<td>(107)</td>
<td>(81)</td>
<td>(78)</td>
<td></td>
</tr>
<tr>
<td>Weighted average term to settlement</td>
<td>- 10 %</td>
<td>(40)</td>
<td>(38)</td>
<td>(37)</td>
<td></td>
</tr>
<tr>
<td>Expected loss</td>
<td>- 10 %</td>
<td>712</td>
<td>718</td>
<td>704</td>
<td>78</td>
</tr>
<tr>
<td>Inflation rate</td>
<td>- 1 %</td>
<td>107</td>
<td>81</td>
<td>78</td>
<td></td>
</tr>
</tbody>
</table>

| In €000               | Change in assumptions | 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 |
|-----------------------|-----------------------|-------------------------------------------------|-----------------------------------------------|--------------------------------------|                                     |
| 2022                  |                       |                                                 |                                               |                                      |                                     |
| Weighted average term to settlement | + 10 %                | 41                                              | 40                                            | 39                                   |                                     |
| Expected loss         | + 10 %                | (741)                                           | (764)                                         | (733)                                | (83)                                |
| Inflation rate        | + 1 %                 | (115)                                           | (85)                                          | (83)                                 |                                     |
| Weighted average term to settlement | - 10 %                | (41)                                            | (40)                                          | (39)                                 |                                     |
| Expected loss         | - 10 %                | 741                                             | 764                                           | 733                                  | 83                                  |
| Inflation rate        | - 1 %                 | 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.

Gross undiscounted liabilities for incurred claims for 2023 - Personal accident insurance

<table>
<thead>
<tr>
<th>€000</th>
<th>Before</th>
<th>2019*</th>
<th>2020*</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accident year</td>
<td>At end of accident year</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>One year later</td>
<td>1,209</td>
<td>1,115</td>
<td>1,109</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Two years later</td>
<td>1,233</td>
<td>1,088</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross estimates of the undiscounted amount of the claims</td>
<td>At end of accident year</td>
<td>(345)</td>
<td>(381)</td>
<td>(316)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>One year later</td>
<td>(956)</td>
<td>(925)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Two years later</td>
<td>(1,214)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cumulative payments to date</td>
<td>(1,214)</td>
<td>(925)</td>
<td>(316)</td>
<td>(2,455)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross undiscounted liabilities for incurred claims</td>
<td>11</td>
<td>163</td>
<td>793</td>
<td>967</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effect of discounting</td>
<td></td>
<td></td>
<td></td>
<td>(76)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total gross liabilities for incurred claims</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>891</td>
<td></td>
</tr>
</tbody>
</table>

Estimates of the present value of future cash flows

<table>
<thead>
<tr>
<th>Note</th>
<th>Risk adjustment</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total gross liabilities for incurred claims</td>
<td>869</td>
<td>22</td>
</tr>
</tbody>
</table>

Related to

Personal accident insurance | 11.1.1

Note

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

<table>
<thead>
<tr>
<th>€000</th>
<th>Before 2019</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>At end of accident year</td>
<td>1,264</td>
<td>1,359</td>
<td>1,448</td>
<td>2,222</td>
<td>2,158</td>
<td></td>
<td></td>
</tr>
<tr>
<td>One year later</td>
<td>1,304</td>
<td>1,378</td>
<td>1,424</td>
<td>2,238</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two years later</td>
<td>1,300</td>
<td>1,332</td>
<td>1,433</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Three years later</td>
<td>1,329</td>
<td>1,368</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Four years later</td>
<td>1,352</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross estimates of the</td>
<td>1,352</td>
<td>1,368</td>
<td>1,433</td>
<td>2,238</td>
<td>2,158</td>
<td></td>
<td>8,549</td>
</tr>
<tr>
<td>undiscounted amount of the</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>claims</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At end of accident year</td>
<td>(319)</td>
<td>(411)</td>
<td>(511)</td>
<td>(616)</td>
<td>(544)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>One year later</td>
<td>(839)</td>
<td>(961)</td>
<td>(984)</td>
<td>(1,360)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two years later</td>
<td>(1,080)</td>
<td>(1,167)</td>
<td>(1,206)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Three years later</td>
<td>(1,224)</td>
<td>(1,315)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Four years later</td>
<td>(1,296)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cumulative payments to date</td>
<td>(1,296)</td>
<td>(1,315)</td>
<td>(1,206)</td>
<td>(1,360)</td>
<td>(544)</td>
<td></td>
<td>(5,721)</td>
</tr>
<tr>
<td>Gross undiscounted liabilities</td>
<td>228</td>
<td>56</td>
<td>53</td>
<td>227</td>
<td>878</td>
<td>1,614</td>
<td>3,056</td>
</tr>
<tr>
<td>for incurred claims</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effect of discounting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(205)</td>
</tr>
<tr>
<td>Total gross liabilities for</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2,851</td>
</tr>
<tr>
<td>incurred claims</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Note</th>
<th>Estimates of the present value of future cash flows</th>
<th>Risk adjustment</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total gross liabilities for</td>
<td>2,780</td>
<td>70</td>
<td>2,851</td>
</tr>
<tr>
<td>incurred claims</td>
<td></td>
<td></td>
<td>IFRS 17.130</td>
</tr>
<tr>
<td>Related to</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marine insurance</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

IFRS 17.130
3.1. Insurance risk (continued)

Net undiscounted liability for incurred claims for 2023 - Marine insurance

<table>
<thead>
<tr>
<th>Accident year</th>
<th>Before</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>At end of accident year</td>
<td>923</td>
<td>992</td>
<td>1,086</td>
<td>1,328</td>
<td>1,572</td>
<td></td>
<td></td>
</tr>
<tr>
<td>One year later</td>
<td>952</td>
<td>1,006</td>
<td>1,068</td>
<td>1,290</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two years later</td>
<td>949</td>
<td>972</td>
<td>1,074</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Three years later</td>
<td>970</td>
<td>999</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Four years later</td>
<td>987</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Net estimates of the undiscounted amount of the claims

| 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 |

Total net liabilities for incurred claims

| (127) | |

| Gross liabilities for incurred claims | 2,780 | 70 | 2,851 |
| Amounts recoverable from reinsurers | (332) | (8) | (341) |
| Total net liabilities for incurred claims | 2,448 | 62 | 2,510 |

Marine insurance

| 11.1.2, 11.2.1 | 2,448 | 62 | 2,510 |
3.1. Insurance risk (continued)

Gross undiscounted liabilities for incurred claims for 2023 - Liability reinsurance issued

<table>
<thead>
<tr>
<th>Accident year</th>
<th>Before 2019*</th>
<th>2019*</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>At end of accident year</td>
<td>1,344</td>
<td>1,296</td>
<td>1,232</td>
<td>1,190</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One year later</td>
<td>1,333</td>
<td>1,329</td>
<td>1,224</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two years later</td>
<td>1,345</td>
<td>1,334</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Three years later</td>
<td>1,349</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross estimates of the</td>
<td>1,349</td>
<td>1,334</td>
<td>1,224</td>
<td>1,190</td>
<td>4,997</td>
<td></td>
<td></td>
</tr>
<tr>
<td>undiscounted amount of the</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>claims</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At end of accident year</td>
<td>(758)</td>
<td>(731)</td>
<td>(795)</td>
<td>(615)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One year later</td>
<td>(1,159)</td>
<td>(1,131)</td>
<td>(1,163)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two years later</td>
<td>(1,300)</td>
<td>(1,271)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Three years later</td>
<td>(1,340)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cumulative payments to date</td>
<td>(1,340)</td>
<td>(1,271)</td>
<td>(1,163)</td>
<td>(615)</td>
<td>(4,389)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross undiscounted liabilities</td>
<td>9</td>
<td>63</td>
<td>61</td>
<td>475</td>
<td>608</td>
<td></td>
<td></td>
</tr>
<tr>
<td>for incurred claims</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effect of discounting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(104)</td>
</tr>
<tr>
<td>Total gross liabilities for</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>504</td>
</tr>
<tr>
<td>incurred claims</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* For this product line there are no open claims for these accident years.

**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)
### 3.2. Financial risk (continued)

#### 2023

<table>
<thead>
<tr>
<th>In €000</th>
<th>Up to 1 year</th>
<th>1-2 years</th>
<th>2-3 years</th>
<th>3-4 years</th>
<th>4-5 years</th>
<th>&gt;5 years</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal accident insurance</td>
<td>495</td>
<td>374</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>869</td>
</tr>
<tr>
<td>Marine insurance</td>
<td>1,402</td>
<td>445</td>
<td>417</td>
<td>185</td>
<td>108</td>
<td>223</td>
<td>2,780</td>
</tr>
<tr>
<td>Property insurance</td>
<td>2,729</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2,729</td>
</tr>
<tr>
<td>Liability reinsurance</td>
<td>389</td>
<td>74</td>
<td>30</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>493</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>5,015</strong></td>
<td><strong>893</strong></td>
<td><strong>447</strong></td>
<td><strong>185</strong></td>
<td><strong>108</strong></td>
<td><strong>223</strong></td>
<td><strong>6,871</strong></td>
</tr>
</tbody>
</table>

#### 2022

<table>
<thead>
<tr>
<th>In €000</th>
<th>Up to 1 year</th>
<th>1-2 years</th>
<th>2-3 years</th>
<th>3-4 years</th>
<th>4-5 years</th>
<th>&gt;5 years</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal accident insurance</td>
<td>489</td>
<td>369</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>858</td>
</tr>
<tr>
<td>Marine insurance</td>
<td>1,058</td>
<td>336</td>
<td>315</td>
<td>140</td>
<td>82</td>
<td>168</td>
<td>2,099</td>
</tr>
<tr>
<td>Property insurance</td>
<td>1,942</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1,942</td>
</tr>
<tr>
<td>Liability reinsurance</td>
<td>379</td>
<td>72</td>
<td>29</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>480</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>3,869</strong></td>
<td><strong>778</strong></td>
<td><strong>344</strong></td>
<td><strong>140</strong></td>
<td><strong>82</strong></td>
<td><strong>168</strong></td>
<td><strong>5,380</strong></td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>In €000</th>
<th>Up to 1 year</th>
<th>1-2 years</th>
<th>2-3 years</th>
<th>3-4 years</th>
<th>4-5 years</th>
<th>&gt;5 years</th>
<th>No maturity</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Financial assets</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash and cash equivalents</td>
<td>2,276</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2,276</td>
</tr>
<tr>
<td>Equity and debt instruments at FVPL</td>
<td>4,586</td>
<td>655</td>
<td>547</td>
<td>220</td>
<td>129</td>
<td>264</td>
<td>507</td>
<td>6,908</td>
</tr>
<tr>
<td>Debt instruments at FVOCI</td>
<td>2,475</td>
<td>2,109</td>
<td>2,058</td>
<td>2,038</td>
<td>1,752</td>
<td>1,392</td>
<td>-</td>
<td>11,824</td>
</tr>
<tr>
<td>Debt instruments at amortised cost</td>
<td>254</td>
<td>233</td>
<td>205</td>
<td>159</td>
<td>208</td>
<td>-</td>
<td>-</td>
<td>1,059</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>9,591</strong></td>
<td><strong>2,997</strong></td>
<td><strong>2,810</strong></td>
<td><strong>2,417</strong></td>
<td><strong>2,089</strong></td>
<td><strong>1,656</strong></td>
<td><strong>507</strong></td>
<td><strong>22,067</strong></td>
</tr>
</tbody>
</table>
Notes to the Financial Statements

3.2. Financial risk (continued)

<table>
<thead>
<tr>
<th>In €000</th>
<th>2023</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No more than 12 months</td>
<td>More than 12 months</td>
</tr>
<tr>
<td>Financial assets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash and cash equivalents</td>
<td>9,420</td>
<td>11,845</td>
</tr>
<tr>
<td>Equity and debt instruments at FVPL</td>
<td>2,276</td>
<td>2,726</td>
</tr>
<tr>
<td>Debt instruments at FVOCI</td>
<td>2,451</td>
<td>8,941</td>
</tr>
<tr>
<td>Debt instruments at amortised cost</td>
<td>254</td>
<td>782</td>
</tr>
<tr>
<td>Insurance contract assets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insurance issued</td>
<td>22</td>
<td>13</td>
</tr>
<tr>
<td>Reinsurance held</td>
<td>415</td>
<td>393</td>
</tr>
<tr>
<td>Insurance contract liabilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insurance issued</td>
<td>(8,305)</td>
<td>(4,699)</td>
</tr>
<tr>
<td>Reinsurance held</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>In €000</th>
<th>2023</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No more than 12 months</td>
<td>More than 12 months</td>
</tr>
<tr>
<td>Financial assets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash and cash equivalents</td>
<td>1,888</td>
<td>-</td>
</tr>
<tr>
<td>Equity and debt instruments at FVPL</td>
<td>3,606</td>
<td>408</td>
</tr>
<tr>
<td>Debt instruments at FVOCI</td>
<td>2,397</td>
<td>2,036</td>
</tr>
<tr>
<td>Debt instruments at amortised cost</td>
<td>249</td>
<td>214</td>
</tr>
<tr>
<td>TOTAL</td>
<td>8,140</td>
<td>2,686</td>
</tr>
</tbody>
</table>
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.

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.
Notes to the Financial Statements

3.2. Financial risk (continued)

The table below summarises the Company’s financial assets and insurance contract assets and liabilities by major currencies:

<table>
<thead>
<tr>
<th>Financial assets</th>
<th>2023</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash and cash equivalents</td>
<td>20,296</td>
<td>17,504</td>
</tr>
<tr>
<td>Equity and debt instruments at FVPL</td>
<td>6,597</td>
<td>5,452</td>
</tr>
<tr>
<td>Debt instruments at FVOCI</td>
<td>10,432</td>
<td>9,200</td>
</tr>
<tr>
<td>Debt instruments at amortised cost</td>
<td>1,036</td>
<td>987</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Insurance contract assets</th>
<th>2023</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal accident insurance</td>
<td>235</td>
<td>963</td>
</tr>
<tr>
<td>Marine insurance</td>
<td>33</td>
<td>2</td>
</tr>
<tr>
<td>Property insurance</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Liability reinsurance</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Reinsurance held</td>
<td>202</td>
<td>961</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Insurance contract liabilities</th>
<th>2023</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal accident insurance</td>
<td>5,079</td>
<td>6,324</td>
</tr>
<tr>
<td>Marine insurance</td>
<td>3,239</td>
<td>2,620</td>
</tr>
<tr>
<td>Property insurance</td>
<td>2,887</td>
<td>2,379</td>
</tr>
<tr>
<td>Liability reinsurance</td>
<td>998</td>
<td>1,007</td>
</tr>
<tr>
<td>Reinsurance held</td>
<td>202</td>
<td>961</td>
</tr>
</tbody>
</table>

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.

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.
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:

<table>
<thead>
<tr>
<th>In €000</th>
<th>2023</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Insurance contract assets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal accident insurance</td>
<td>340</td>
<td>442</td>
</tr>
<tr>
<td>Marine insurance</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Property insurance</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Liability reinsurance</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Reinsurance held</td>
<td>340</td>
<td>442</td>
</tr>
<tr>
<td><strong>Insurance contract liabilities</strong></td>
<td>(4,142)</td>
<td>(3,437)</td>
</tr>
<tr>
<td>Personal accident insurance</td>
<td>(869)</td>
<td>(858)</td>
</tr>
<tr>
<td>Marine insurance</td>
<td>(2,780)</td>
<td>(2,099)</td>
</tr>
<tr>
<td>Property insurance</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Liability reinsurance</td>
<td>(493)</td>
<td>(480)</td>
</tr>
<tr>
<td>Reinsurance held</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

| **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.
### Financial risk (continued)

#### Insurance and reinsurance contracts

<table>
<thead>
<tr>
<th>Change in Interest rate</th>
<th>Impact on profit before tax</th>
<th>Impact on equity</th>
<th>Impact on Profit before tax</th>
<th>Impact on equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>+100 bps</td>
<td>32</td>
<td>50</td>
<td>29</td>
<td>47</td>
</tr>
<tr>
<td>-100 bps</td>
<td>(33)</td>
<td>(52)</td>
<td>(31)</td>
<td>(51)</td>
</tr>
</tbody>
</table>

#### Debt instruments

<table>
<thead>
<tr>
<th>Change in Interest rate</th>
<th>Impact on profit before tax</th>
<th>Impact on equity</th>
<th>Impact on Profit before tax</th>
<th>Impact on equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>+100 bps</td>
<td>(284)</td>
<td>(314)</td>
<td>(291)</td>
<td>(321)</td>
</tr>
<tr>
<td>-100 bps</td>
<td>(32)</td>
<td>(53)</td>
<td>(31)</td>
<td>(51)</td>
</tr>
</tbody>
</table>

#### 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 assets and/or liabilities will fluctuate because of changes in market prices (other than those arising from interest rate or foreign exchange rate risk), whether those changes are caused by factors specific to the individual financial instrument or contract, or by factors affecting all similar contracts or financial instruments traded in the market.

The Company’s price risk exposure relates to financial assets and financial liabilities whose values will fluctuate as a result of changes in market prices. The Company does not issue any participating contracts. Therefore, there are no insurance or reinsurance contracts which are exposed to price risk.

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 €507,000 (2022: €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 €50,700 (2022: €90,200) increase/decrease on the profit before tax and approximately €38,500 (2022: €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.

#### 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 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.
Notes to the Financial Statements

3.2. Financial risk (continued)

The Company’s internal credit rating grades:

<table>
<thead>
<tr>
<th>Internal rating grade</th>
<th>Internal rating description</th>
<th>Euroland Credit Agency’s rating (when applicable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>High grade</td>
<td>Very good +</td>
</tr>
<tr>
<td>3</td>
<td>High grade</td>
<td>Very good</td>
</tr>
<tr>
<td>4</td>
<td>High grade</td>
<td>Very good -</td>
</tr>
<tr>
<td>5-6</td>
<td>Standard grade</td>
<td>Good +</td>
</tr>
<tr>
<td>7-8</td>
<td>Standard grade</td>
<td>Good</td>
</tr>
<tr>
<td>9-10</td>
<td>Standard grade</td>
<td>Good -</td>
</tr>
<tr>
<td>11</td>
<td>Sub-standard grade</td>
<td>Average +</td>
</tr>
<tr>
<td>12</td>
<td>Sub-standard grade</td>
<td>Average</td>
</tr>
<tr>
<td>13</td>
<td>Past due but not impaired</td>
<td>Bad</td>
</tr>
<tr>
<td>15</td>
<td>Past due but not impaired</td>
<td>Bad -</td>
</tr>
<tr>
<td>17</td>
<td>Individually impaired</td>
<td>Very bad</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>In €000</th>
<th>2023</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Financial Services</td>
</tr>
<tr>
<td>Cash and cash equivalents</td>
<td>2,276</td>
</tr>
<tr>
<td>Debt instruments at FVPL</td>
<td>2,094</td>
</tr>
<tr>
<td>Debt instruments at FVOCI</td>
<td>3,311</td>
</tr>
<tr>
<td>Debt instruments at amortised cost</td>
<td>-</td>
</tr>
<tr>
<td>Reinsurance contract assets</td>
<td>808</td>
</tr>
<tr>
<td>Total credit risk exposure</td>
<td>8,489</td>
</tr>
</tbody>
</table>
3.2. **Financial risk (continued)**

<table>
<thead>
<tr>
<th>In €000</th>
<th>Financial Services</th>
<th>Government</th>
<th>Retail and Wholesale</th>
<th>Construction and Materials</th>
<th>Manufacturing and Petroleum</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash and cash equivalents</td>
<td>1,888</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1,888</td>
</tr>
<tr>
<td>Debt instruments at FVPL</td>
<td>2,056</td>
<td>3,141</td>
<td>186</td>
<td>69</td>
<td>-</td>
<td>5,452</td>
</tr>
<tr>
<td>Debt instruments at FVOCI</td>
<td>3,117</td>
<td>5,728</td>
<td>729</td>
<td>705</td>
<td>409</td>
<td>10,688</td>
</tr>
<tr>
<td>Debt instruments at amortised cost</td>
<td>-</td>
<td>987</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>987</td>
</tr>
<tr>
<td>Reinsurance contract assets</td>
<td>1,408</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1,408</td>
</tr>
<tr>
<td><strong>Total credit risk exposure</strong></td>
<td><strong>8,469</strong></td>
<td><strong>9,856</strong></td>
<td><strong>915</strong></td>
<td><strong>774</strong></td>
<td><strong>409</strong></td>
<td><strong>20,423</strong></td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>In €000</th>
<th>High grade</th>
<th>Standard grade</th>
<th>Past due but not impaired</th>
<th>Not rated</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash and cash equivalents</td>
<td>2,276</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2,276</td>
</tr>
<tr>
<td>Debt instruments at FVPL</td>
<td>6,299</td>
<td>298</td>
<td>-</td>
<td>-</td>
<td>6,597</td>
</tr>
<tr>
<td>Debt instruments at FVOCI</td>
<td>9,470</td>
<td>1,886</td>
<td>-</td>
<td>-</td>
<td>11,356</td>
</tr>
<tr>
<td>Debt instruments at amortised cost</td>
<td>1,036</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1,036</td>
</tr>
<tr>
<td>Reinsurance contract assets</td>
<td>796</td>
<td>12</td>
<td>-</td>
<td>-</td>
<td>808</td>
</tr>
<tr>
<td><strong>Total credit risk exposure</strong></td>
<td><strong>19,877</strong></td>
<td><strong>2,196</strong></td>
<td>-</td>
<td>-</td>
<td><strong>22,073</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>In €000</th>
<th>High grade</th>
<th>Standard grade</th>
<th>Past due but not impaired</th>
<th>Not rated</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash and cash equivalents</td>
<td>1,888</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1,888</td>
</tr>
<tr>
<td>Debt instruments at FVPL</td>
<td>5,220</td>
<td>232</td>
<td>-</td>
<td>-</td>
<td>5,452</td>
</tr>
<tr>
<td>Debt instruments at FVOCI</td>
<td>8,930</td>
<td>1,758</td>
<td>-</td>
<td>-</td>
<td>10,688</td>
</tr>
<tr>
<td>Debt instruments at amortised cost</td>
<td>987</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>987</td>
</tr>
<tr>
<td>Reinsurance contract assets</td>
<td>1,390</td>
<td>18</td>
<td>-</td>
<td>-</td>
<td>1,408</td>
</tr>
<tr>
<td><strong>Total credit risk exposure</strong></td>
<td><strong>18,415</strong></td>
<td><strong>2,008</strong></td>
<td>-</td>
<td>-</td>
<td><strong>20,423</strong></td>
</tr>
</tbody>
</table>

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 risk.
Notes to the Financial Statements

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:

- 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/protect
- 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 3.2.4.1:

<table>
<thead>
<tr>
<th>In €000</th>
<th>2023</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Internal rating grade</strong></td>
<td>12mECL</td>
<td>LTECL</td>
</tr>
<tr>
<td>Performing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High grade</td>
<td>9,470</td>
<td>–</td>
</tr>
<tr>
<td>Standard grade</td>
<td>1,264</td>
<td>622</td>
</tr>
<tr>
<td>Past due but not impaired</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><strong>Total Net Amount</strong></td>
<td><strong>10,734</strong></td>
<td><strong>622</strong></td>
</tr>
</tbody>
</table>

(IFRS 7.35M)
### 3.2. Financial risk (continued)

An analysis of changes in the fair value and the corresponding ECLs is, as follows:

<table>
<thead>
<tr>
<th>In €000</th>
<th>12mECL</th>
<th>LTECL</th>
<th>Total</th>
<th>12mECL</th>
<th>LTECL</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fair value as at 1 January</strong></td>
<td>9,970</td>
<td>718</td>
<td>10,688</td>
<td>8,853</td>
<td>673</td>
<td>9,526</td>
</tr>
<tr>
<td>New assets originated or purchased</td>
<td>1,800</td>
<td>-</td>
<td>1,800</td>
<td>600</td>
<td>-</td>
<td>600</td>
</tr>
<tr>
<td>Assets derecognised or matured</td>
<td>(1,886)</td>
<td>(156)</td>
<td>(2,042)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Accrued interest capitalised</td>
<td>690</td>
<td>42</td>
<td>732</td>
<td>548</td>
<td>47</td>
<td>595</td>
</tr>
<tr>
<td>Change in fair value</td>
<td>160</td>
<td>18</td>
<td>178</td>
<td>(31)</td>
<td>(4)</td>
<td>(35)</td>
</tr>
<tr>
<td>Movement between 12mECL and LTECL</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>At 31 December</strong></td>
<td>10,734</td>
<td>622</td>
<td>11,356</td>
<td>9,970</td>
<td>718</td>
<td>10,688</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>In €000</th>
<th>12mECL</th>
<th>LTECL</th>
<th>Total</th>
<th>12mECL</th>
<th>LTECL</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ECL as at 1 January</strong></td>
<td>18</td>
<td>43</td>
<td>61</td>
<td>17</td>
<td>42</td>
<td>59</td>
</tr>
<tr>
<td>New assets originated or purchased</td>
<td>4</td>
<td>-</td>
<td>4</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Assets derecognised or matured (excluding write-offs)</td>
<td>(2)</td>
<td>(2)</td>
<td>(4)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Unwind of discount</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Net foreign exchange expense/(income)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Movement between 12mECL and LTECL</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>At 31 December</strong></td>
<td>20</td>
<td>42</td>
<td>62</td>
<td>18</td>
<td>43</td>
<td>61</td>
</tr>
</tbody>
</table>

#### 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 3.2.4.1.

<table>
<thead>
<tr>
<th>Internal rating grade</th>
<th>2023</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performing</td>
<td>12mECL</td>
<td>LTECL</td>
</tr>
<tr>
<td>High grade</td>
<td>1,038</td>
<td>-</td>
</tr>
<tr>
<td>Standard grade</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Past due but not impaired</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total Gross Amount</strong></td>
<td>1,038</td>
<td>-</td>
</tr>
<tr>
<td>ECL</td>
<td>(2)</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total Net Amount</strong></td>
<td>1,036</td>
<td>-</td>
</tr>
</tbody>
</table>
Notes to the Financial Statements

3.2. Financial risk (continued)

An analysis of changes in the gross amount and the corresponding ECLs is, as follows:

<table>
<thead>
<tr>
<th>In €000</th>
<th>2023</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross amount as at 1 January</td>
<td>989</td>
<td>940</td>
</tr>
<tr>
<td>(excluding write-offs)</td>
<td>(excluding write-offs)</td>
<td>(excluding write-offs)</td>
</tr>
<tr>
<td>12mECL</td>
<td>LTECL</td>
<td>Total</td>
</tr>
<tr>
<td>989</td>
<td>–</td>
<td>989</td>
</tr>
<tr>
<td>New assets originated or purchased</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Assets derecognised or matured</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Accrued interest capitalised</td>
<td>49</td>
<td>–</td>
</tr>
<tr>
<td>Movement between 12mECL and LTECL</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>At 31 December</td>
<td>1,038</td>
<td>–</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>In €000</th>
<th>2023</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECL as at 1 January</td>
<td>12mECL</td>
<td>LTECL</td>
</tr>
<tr>
<td>2</td>
<td>–</td>
<td>2</td>
</tr>
<tr>
<td>New assets originated or purchased</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Assets derecognised or matured</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Unwind of discount</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Movement between 12mECL and LTECL</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>At 31 December</td>
<td>2</td>
<td>–</td>
</tr>
</tbody>
</table>

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 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. Such regulations not only prescribe approval and monitoring of activities, but also impose certain restrictive provisions (e.g., capital adequacy) to minimise the risk of default and insolvency on the part of the insurance companies to meet unforeseeable liabilities as they arise.

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 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 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 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 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 structure.
Notes to the Financial Statements

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:

<table>
<thead>
<tr>
<th></th>
<th>31 December</th>
<th>1 January</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2023</td>
<td>2022</td>
</tr>
<tr>
<td>Total equity</td>
<td>8,591</td>
<td>6,477</td>
</tr>
<tr>
<td>Adjustments onto a regulatory basis</td>
<td>(1,121)</td>
<td>(1,418)</td>
</tr>
<tr>
<td>Available capital resources</td>
<td>7,470</td>
<td>5,101</td>
</tr>
<tr>
<td>Prescribed capital amount</td>
<td>1,569</td>
<td>1,654</td>
</tr>
</tbody>
</table>

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 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.
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 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.

Discount rates applied for discounting of future cash flows are listed below:

<table>
<thead>
<tr>
<th></th>
<th>1 year</th>
<th>3 years</th>
<th>5 years</th>
<th>10 years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2023</td>
<td>2022</td>
<td>2023</td>
<td>2022</td>
</tr>
<tr>
<td>Personal accident, marine and property contracts issued</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EUR</td>
<td>0.8%</td>
<td>0.9%</td>
<td>1.0%</td>
<td>1.1%</td>
</tr>
<tr>
<td>USD</td>
<td>2.1%</td>
<td>2.2%</td>
<td>2.3%</td>
<td>2.4%</td>
</tr>
<tr>
<td>Liability reinsurance contracts issued</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EUR</td>
<td>0.8%</td>
<td>0.9%</td>
<td>1.1%</td>
<td>1.2%</td>
</tr>
<tr>
<td>USD</td>
<td>2.1%</td>
<td>2.2%</td>
<td>2.4%</td>
<td>2.5%</td>
</tr>
</tbody>
</table>
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, and the additional amount above the expected present value of future cash flows required to meet the target percentiles.

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 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 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 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:

<table>
<thead>
<tr>
<th>In €000</th>
<th>Personal accident insurance</th>
<th>Marine insurance</th>
<th>Property insurance</th>
<th>Liability reinsurance issued</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>In 2023</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incurred claims and other expenses</td>
<td>a 1,109</td>
<td>2,207</td>
<td>4,317</td>
<td>1,090</td>
<td>8,723</td>
</tr>
<tr>
<td>Amortisation of insurance acquisition cash flows</td>
<td>a 33</td>
<td>285</td>
<td>–</td>
<td>109</td>
<td>427</td>
</tr>
<tr>
<td>Losses on onerous contracts and reversals of those losses</td>
<td>–</td>
<td>(3)</td>
<td>–</td>
<td>–</td>
<td>(3)</td>
</tr>
<tr>
<td>Changes to liabilities for incurred claims</td>
<td>(27)</td>
<td>16</td>
<td>(122)</td>
<td>(8)</td>
<td>(141)</td>
</tr>
<tr>
<td>Impairment of assets for insurance acquisition cash flows</td>
<td>–</td>
<td>19</td>
<td>–</td>
<td>–</td>
<td>19</td>
</tr>
<tr>
<td>Reversal of impairment of assets for insurance acquisition cash flows</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Insurance acquisition cash flows recognised when incurred</td>
<td>–</td>
<td>–</td>
<td>396</td>
<td>–</td>
<td>396</td>
</tr>
<tr>
<td>Total</td>
<td>1,115</td>
<td>2,524</td>
<td>4,591</td>
<td>1,191</td>
<td>9,421</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>In €000</th>
<th>Personal accident insurance</th>
<th>Marine insurance</th>
<th>Property insurance</th>
<th>Liability reinsurance issued</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>In 2022</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incurred claims and other expenses</td>
<td>a 1,115</td>
<td>2,158</td>
<td>4,265</td>
<td>1,232</td>
<td>8,773</td>
</tr>
<tr>
<td>Amortisation of insurance acquisition cash flows</td>
<td>a 33</td>
<td>293</td>
<td>–</td>
<td>125</td>
<td>450</td>
</tr>
<tr>
<td>Losses on onerous contracts and reversals of those losses</td>
<td>–</td>
<td>17</td>
<td>–</td>
<td>–</td>
<td>17</td>
</tr>
<tr>
<td>Changes to liabilities for incurred claims</td>
<td>(27)</td>
<td>63</td>
<td>(30)</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>Impairment of assets for insurance acquisition cash flows</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Reversal of impairment of assets for insurance acquisition cash flows</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Insurance acquisition cash flows recognised when incurred</td>
<td>–</td>
<td>–</td>
<td>391</td>
<td>–</td>
<td>391</td>
</tr>
<tr>
<td>Total</td>
<td>1,121</td>
<td>2,531</td>
<td>4,626</td>
<td>1,363</td>
<td>9,643</td>
</tr>
</tbody>
</table>

Notes:

a. The nature and amount of material expense included is disclosed in Note 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 11.1.3, which is in line with Illustrative example 10 from Illustrative Examples for IFRS 17 Insurance Contracts.
# Notes to the Financial Statements

## 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:

<table>
<thead>
<tr>
<th></th>
<th>2023</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Investment income</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amounts recognised in the profit or loss</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest revenue calculated using the effective interest method</td>
<td>311</td>
<td></td>
<td></td>
<td>470</td>
<td>781</td>
<td></td>
</tr>
<tr>
<td>Other interest and similar income</td>
<td></td>
<td>152</td>
<td>146</td>
<td>60</td>
<td></td>
<td>358</td>
</tr>
<tr>
<td>Net fair value gains/(losses) on financial assets at fair value through profit or loss</td>
<td></td>
<td>43</td>
<td>55</td>
<td>6</td>
<td></td>
<td>104</td>
</tr>
<tr>
<td>Net fair value gains/(losses) on derecognition of financial assets measured at fair value through other comprehensive income</td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Impairment loss on financial assets</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td>(7)</td>
<td>(5)</td>
</tr>
<tr>
<td>Net foreign exchange income/(expenses)</td>
<td></td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Total amounts recognised in the profit or loss</td>
<td>313</td>
<td>203</td>
<td>201</td>
<td>66</td>
<td>469</td>
<td>1,252</td>
</tr>
<tr>
<td>Amounts recognised in OCI</td>
<td>70</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>108</td>
</tr>
<tr>
<td>Total investment income</td>
<td>383</td>
<td>203</td>
<td>201</td>
<td>66</td>
<td>577</td>
<td>1,430</td>
</tr>
</tbody>
</table>

| Insurance finance income/(expenses) from insurance contracts issued |      |       |       |       |       |       |
| Interest accreted to insurance contracts using current financial assumptions |      |      |      |       |       |       |
| Interest accreted to insurance contracts using locked-in rate |      | (162) |      |       |       | (162) |
| Due to changes in interest rates and other financial assumptions |      | (13)  |      |       |       | (13)  |
| Net foreign exchange income/(expenses) |      |       |      |       |       | (6)   |
| Total insurance finance income/(expenses) from insurance contracts issued | (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 |      |       |       |       |       |       |
| Interest accreted to reinsurance contracts using current financial assumptions |      |      |      |       |       | 31    |
| Changes in non-performance risk of reinsurer |      |      |      |       |       |       |
| Net foreign exchange income/(expense) |      |       |      |       |       | 5     |
| Reinsurance finance income/(expenses) from reinsurance contracts held |      |       |      |       |       | 36    |
| Represented by: |      |       |       |       |       |       |
| Amounts recognised in profit or loss |      | 36    |      |       |       | 36    |
| Amounts recognised in OCI |      |      |      |       |       |       |

| Total net investment income, insurance finance expenses and reinsurance finance income | 208  | 155   | 201   | 47    | 577   | 1,188 |
| Represented by: |      |       |       |       |       |       |
| Amounts recognised in profit or loss | 151  | 155   | 201   | 47    | 469   | 1,023 |
| Amounts recognised in OCI | 57   |      |      |       | 108   | 165   |
7. Total investment income and net insurance financial result (continued)

<table>
<thead>
<tr>
<th>In €000</th>
<th>2022</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Personal accident insurance</td>
<td>Marine insurance</td>
</tr>
<tr>
<td><strong>Insurance related</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Investment income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amounts recognised in the profit or loss</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest revenue calculated using the effective interest method</td>
<td>357</td>
<td>–</td>
</tr>
<tr>
<td>Other interest and similar income</td>
<td>–</td>
<td>146</td>
</tr>
<tr>
<td>Net fair value gains/(losses) on financial assets at fair value through profit or loss</td>
<td>–</td>
<td>(7)</td>
</tr>
<tr>
<td>Net fair value gains/(losses) on derecognition of financial assets measured at fair value through other comprehensive income</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Impairment loss on financial assets</td>
<td>(1)</td>
<td>–</td>
</tr>
<tr>
<td>Net foreign exchange income/(expenses)</td>
<td>–</td>
<td>(35)</td>
</tr>
<tr>
<td><strong>Total amounts recognised in the profit or loss</strong></td>
<td>356</td>
<td>104</td>
</tr>
<tr>
<td>Amounts recognised in OCI</td>
<td>(21)</td>
<td>–</td>
</tr>
<tr>
<td><strong>Total investment income</strong></td>
<td>335</td>
<td>104</td>
</tr>
</tbody>
</table>

| Insurance finance income/(expenses) from insurance contracts issued | | | | | | |
| Interest accreted to insurance contracts using 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 financial assumptions | 4 | – | – | – | – | 4 |
| Net foreign exchange income/(expenses) | – | 32 | – | – | – | 32 |
| **Total insurance finance income/(expenses) from insurance contracts issued** | (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 using current financial assumptions | – | 35 | – | – | – | 35 |
| Changes in non-performance risk of reinsurer | – | (1) | – | – | – | (1) |
| Net foreign exchange income/(expense) | – | (25) | – | – | – | (25) |
| **Reinsurance finance income/(expenses) from reinsurer contracts held** | – | 9 | – | – | – | 9 |

Represented by:
- Amounts recognised in profit or loss | – | 9 | – | – | – | 9 |
- Amounts recognised in OCI | – | – | – | – | – | – |

**Total net investment income, insurance finance expenses and reinsurance finance income**

| | 155 | 77 | 128 | 36 | 274 | 670 |

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.
**Notes to the Financial Statements**

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) 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:

<table>
<thead>
<tr>
<th>In €000</th>
<th>Insurance related</th>
<th>Non-insurance related</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Personal accident insurance</td>
<td>Marine insurance</td>
<td>Property insurance</td>
</tr>
<tr>
<td>Equity and debt instruments at fair value through profit or loss</td>
<td>-</td>
<td>2,709</td>
<td>2,804</td>
</tr>
<tr>
<td>Debt instruments at fair value through other comprehensive income</td>
<td>5,695</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Debt instruments at amortised cost</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>5,695</td>
<td>2,709</td>
<td>2,804</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>In €000</th>
<th>Insurance related</th>
<th>Non-insurance related</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Personal accident insurance</td>
<td>Marine insurance</td>
<td>Property insurance</td>
</tr>
<tr>
<td>Equity and debt instruments at fair value through profit or loss</td>
<td>-</td>
<td>2,021</td>
<td>2,413</td>
</tr>
<tr>
<td>Debt instruments at fair value through other comprehensive income</td>
<td>6,433</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Debt instruments at amortised cost</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>6,433</td>
<td>2,021</td>
<td>2,413</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>In €000</th>
<th>31 December</th>
<th>1 January</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2023</td>
<td>2022</td>
</tr>
<tr>
<td><strong>Fair value (mandatory)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equity securities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government debt instruments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Euroland</td>
<td>3,572</td>
<td>3,141</td>
</tr>
<tr>
<td>Other debt instruments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial institutions</td>
<td>1,568</td>
<td>1,024</td>
</tr>
<tr>
<td>Non-financial institutions</td>
<td>950</td>
<td>385</td>
</tr>
<tr>
<td><strong>Total other debt instruments</strong></td>
<td>2,518</td>
<td>1,409</td>
</tr>
<tr>
<td><strong>Total equity and debt instruments at FVPL</strong></td>
<td><strong>6,597</strong></td>
<td><strong>5,452</strong></td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>In €000</th>
<th>31 December</th>
<th>1 January</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2023</td>
<td>2022</td>
</tr>
<tr>
<td><strong>Debt instruments measured at FVOCI</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government debt instruments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Euroland</td>
<td>6,086</td>
<td>5,729</td>
</tr>
<tr>
<td>Other debt instruments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial institutions</td>
<td>3,311</td>
<td>3,116</td>
</tr>
<tr>
<td>Non-financial institutions</td>
<td>1,959</td>
<td>1,843</td>
</tr>
<tr>
<td><strong>Total other debt instruments</strong></td>
<td>5,269</td>
<td>4,959</td>
</tr>
<tr>
<td><strong>Total debt instruments measured at FVOCI</strong></td>
<td><strong>11,356</strong></td>
<td><strong>10,688</strong></td>
</tr>
</tbody>
</table>

The loss allowance for debt investments at FVOCI of 62,000 (2022: 61,000) does not reduce the carrying amount of these investments (which are measured at fair value), but gives rise to an equal and opposite gain in OCI. IFRS 7.16A

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.

<table>
<thead>
<tr>
<th>In €000</th>
<th>31 December</th>
<th>1 January</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2023</td>
<td>2022</td>
</tr>
<tr>
<td><strong>Debt instruments at amortised cost</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government debt instruments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Euroland</td>
<td>1,036</td>
<td>987</td>
</tr>
<tr>
<td><strong>Total debt instruments at amortised cost</strong></td>
<td><strong>1,036</strong></td>
<td><strong>987</strong></td>
</tr>
</tbody>
</table>
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:

<table>
<thead>
<tr>
<th>In €000</th>
<th>2023</th>
<th></th>
<th>2022</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Assets</td>
<td>Liabilities</td>
<td>Net</td>
<td>Assets</td>
</tr>
<tr>
<td>Insurance contracts issued</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal accident insurance</td>
<td>–</td>
<td>5,079</td>
<td>5,079</td>
<td>–</td>
</tr>
<tr>
<td>Marine insurance</td>
<td>–</td>
<td>4,005</td>
<td>4,005</td>
<td>–</td>
</tr>
<tr>
<td>Property insurance</td>
<td>–</td>
<td>2,887</td>
<td>2,887</td>
<td>–</td>
</tr>
<tr>
<td>Liability reinsurance issued</td>
<td>(35)</td>
<td>1,033</td>
<td>998</td>
<td>(49)</td>
</tr>
<tr>
<td>Total insurance contracts</td>
<td>(35)</td>
<td>13,004</td>
<td>12,969</td>
<td>(49)</td>
</tr>
</tbody>
</table>

Reinsurance contracts held

<table>
<thead>
<tr>
<th></th>
<th>(808)</th>
<th>–</th>
<th>(808)</th>
<th>(1,408)</th>
<th>–</th>
<th>(1,408)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total reinsurance contracts</td>
<td>(808)</td>
<td>–</td>
<td>(808)</td>
<td>(1,408)</td>
<td>–</td>
<td>(1,408)</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>Liabilities for remaining coverage</th>
<th>Liabilities for incurred claims</th>
<th>Assets for insurance acquisition cash flows</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excluding loss component</td>
<td>Loss component</td>
<td>Estimates of the present value of future cash flows</td>
<td>Risk adjustment</td>
</tr>
<tr>
<td>Insurance contract liabilities as at 01/01</td>
<td>5,561</td>
<td>-</td>
<td>858</td>
</tr>
<tr>
<td>Insurance contract assets as at 01/01</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Net insurance contract (assets)/liabilities as at 01/01</td>
<td>5,561</td>
<td>-</td>
<td>858</td>
</tr>
<tr>
<td>Insurance revenue</td>
<td>(1,555)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Insurance service expenses</td>
<td>33</td>
<td>-</td>
<td>1,082</td>
</tr>
<tr>
<td>Incurred claims and other expenses</td>
<td>-</td>
<td>-</td>
<td>1,082</td>
</tr>
<tr>
<td>Amortisation of insurance acquisition cash flows</td>
<td>33</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Losses on onerous contracts and reversals of those losses</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Changes to liabilities for incurred claims</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Impairment of assets for insurance acquisition cash flows</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Reversal of impairment of assets for insurance acquisition cash flows</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Investment components</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Insurance service result</td>
<td>(1,522)</td>
<td>-</td>
<td>1,082</td>
</tr>
<tr>
<td>Insurance finance expenses</td>
<td>128</td>
<td>-</td>
<td>47</td>
</tr>
<tr>
<td>Effect of movements in exchange rates</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total changes in the statement of comprehensive income</td>
<td>(1,394)</td>
<td>-</td>
<td>1,129</td>
</tr>
<tr>
<td>Cash flows</td>
<td>Premiums received</td>
<td>142</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Claims and other expenses paid</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Insurance acquisition cash flows</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total cash flows</td>
<td>142</td>
<td>-</td>
<td>(1,118)</td>
</tr>
<tr>
<td>Allocation from assets for insurance acquisition cash flows to groups of insurance contracts</td>
<td>(43)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other movements</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Net insurance contract (assets)/liabilities as at 31/12</td>
<td>4,266</td>
<td>-</td>
<td>869</td>
</tr>
<tr>
<td>Insurance contract liabilities as at 31/12</td>
<td>4,188</td>
<td>-</td>
<td>869</td>
</tr>
<tr>
<td>Insurance contract assets as at 31/12</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Net insurance contract (assets)/liabilities as at 31/12</td>
<td>4,266</td>
<td>-</td>
<td>869</td>
</tr>
</tbody>
</table>
### 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)

<table>
<thead>
<tr>
<th>In €000</th>
<th>Liabilities for remaining coverage</th>
<th>Liabilities for incurred claims</th>
<th>Assets for insurance acquisition cash flows</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Excluding loss component</td>
<td>Loss component</td>
<td>Estimates of the present value of future cash flows</td>
<td>Risk adjustment</td>
</tr>
<tr>
<td>Insurance contract liabilities as at 01/01</td>
<td>6,608</td>
<td>–</td>
<td>866</td>
<td>22</td>
</tr>
<tr>
<td>Insurance contract assets as at 01/01</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Net insurance contract (assets)/liabilities as at 01/01</td>
<td>6,608</td>
<td>–</td>
<td>866</td>
<td>22</td>
</tr>
</tbody>
</table>

**Insurance revenue**
- (1,583) | – | – | – | – | (1,583) |
**Insurance service expenses**
- 33 | – | 1,088 | – | – | 1,121 |
**Incurred claims and other expenses**
- – | – | 1,088 | 27 | – | 1,115 |
**Amortisation of insurance acquisition cash flows**
- a 33 | – | – | – | – | 33 |
**Losses on onerous contracts and reversals of those losses**
- – | – | – | – | – | – |
**Changes to liabilities for incurred claims**
- – | – | – | (27) | – | (27) |
**Impairment of assets for insurance acquisition cash flows**
- – | – | – | – | – | – |
**Reversal of impairment of assets for insurance acquisition cash flows**
- – | – | – | – | – | – |
**Insurance components**
- Investment components
- b (1,550) | – | 1,088 | – | – | (462) |
**Insurance finance expenses**
- 156 | – | 25 | – | – | 181 |
**Effect of movements in exchange rates**
- – | – | – | – | – | – |
**Total changes in the statement of comprehensive income**
- Total cash flows
- (1,394) | – | 1,113 | – | – | (281) |
**Cash flows**
- Premiums received
- c 424 | – | – | – | – | 424 |
**Claims and other expenses paid**
- – | – | (1,121) | – | – | (1,121) |
**Insurance acquisition cash flows**
- d (18) | – | – | – | (85) | (103) |
**Total cash flows**
- 406 | – | (1,121) | – | (85) | (800) |
**Allocation from assets for insurance acquisition cash flows to groups of insurance contracts**
- (59) | – | – | – | 59 | – |
**Other movements**
- Net insurance contract (assets)/liabilities as at 31/12
- e – | – | – | – | (8) | (8) |
**Net insurance contract (assets)/liabilities as at 31/12**
- 5,561 | – | 858 | 22 | (117) | 6,324 |
**Insurance contract liabilities as at 31/12**
- 5,561 | – | 858 | 22 | (117) | 6,324 |
**Insurance contract assets as at 31/12**
- – | – | – | – | – | – |
**Net insurance contract (assets)/liabilities as at 31/12**
- 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 not to 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 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 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.
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)

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:

<table>
<thead>
<tr>
<th>Expected timing of derecognition of assets balance as at 31/12</th>
<th>Up to 1 year</th>
<th>1-2 years</th>
<th>2-3 years</th>
<th>3-4 years</th>
<th>4-5 years</th>
<th>&gt;5 years</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>38</td>
<td>22</td>
<td>10</td>
<td>6</td>
<td>2</td>
<td>-</td>
<td>78</td>
</tr>
<tr>
<td>2022</td>
<td>43</td>
<td>36</td>
<td>20</td>
<td>12</td>
<td>6</td>
<td>-</td>
<td>117</td>
</tr>
</tbody>
</table>

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.
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

<table>
<thead>
<tr>
<th>Liabilities for remaining coverage</th>
<th>Liabilities for incurred claims</th>
<th>Assets for insurance acquisition cash flows</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Excluding loss component</td>
<td>Loss component</td>
<td>Estimates of the present value of future cash flows</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>----------------------------</td>
<td>----------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td><strong>Insurance contract liabilities as at 01/01</strong></td>
<td>2,071</td>
<td>17</td>
<td>2,099</td>
</tr>
<tr>
<td><strong>Insurance contract assets as at 01/01</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Net insurance contract (assets)/liabilities as at 01/01</strong></td>
<td>2,071</td>
<td>17</td>
<td>2,099</td>
</tr>
<tr>
<td><strong>Insurance revenue</strong></td>
<td>(3,012)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Insurance service expenses</strong></td>
<td>285</td>
<td>(17)</td>
<td>2,216</td>
</tr>
<tr>
<td>Incurred claims and other expenses</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amortisation of insurance acquisition cash flows</td>
<td>285</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Losses on onerous contracts and reversals of those losses</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Changes to liabilities for incurred claims</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impairment of assets for insurance acquisition cash flows</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reversal of impairment of assets for insurance acquisition cash flows</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Investment components</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Insurance service result</strong></td>
<td>(2,727)</td>
<td>(17)</td>
<td>2,216</td>
</tr>
<tr>
<td><strong>Insurance finance expenses</strong></td>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Effect of movements in exchange rates</strong></td>
<td>4</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td><strong>Total changes in the statement of comprehensive income</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cash flows</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Premiums received</td>
<td>2,410</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Claims and other expenses paid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insurance acquisition cash flows</td>
<td>(85)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total cash flows</strong></td>
<td>2,325</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Allocation from assets for insurance acquisition cash flows to groups of insurance contracts</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other movements</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Net insurance contract (assets)/liabilities as at 31/12</strong></td>
<td>1,558</td>
<td></td>
<td>2,780</td>
</tr>
<tr>
<td><strong>Insurance contract liabilities as at 31/12</strong></td>
<td>1,558</td>
<td></td>
<td>2,780</td>
</tr>
<tr>
<td><strong>Insurance contract assets as at 31/12</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Net insurance contract (assets)/liabilities as at 31/12</strong></td>
<td>1,558</td>
<td></td>
<td>2,780</td>
</tr>
</tbody>
</table>
### Notes to the Financial Statements

#### 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)

<table>
<thead>
<tr>
<th>Liabilities for remaining coverage</th>
<th>Liabilities for incurred claims</th>
<th>Assets for insurance acquisition cash flows</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excluding loss component</td>
<td>Loss component</td>
<td>Estimates of the present value of future cash flows</td>
<td>Risk adjustment</td>
</tr>
<tr>
<td><strong>2022</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insurance contract liabilities as at 01/01</td>
<td>2,061</td>
<td>1,183</td>
<td>29</td>
</tr>
<tr>
<td>Insurance contract assets as at 01/01</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Net insurance contract (assets)/liabilities as at 01/01</strong></td>
<td>2,061</td>
<td>1,183</td>
<td>29</td>
</tr>
<tr>
<td>Insurance revenue</td>
<td>(2,800)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Insurance service expenses</td>
<td>293</td>
<td>17</td>
<td>2,201</td>
</tr>
<tr>
<td>Incurred claims and other expenses</td>
<td>0</td>
<td>0</td>
<td>2,104</td>
</tr>
<tr>
<td>Amortisation of insurance acquisition cash flows</td>
<td>293</td>
<td>0</td>
<td>2,104</td>
</tr>
<tr>
<td>Losses on onerous contracts and reversals of those losses</td>
<td>0</td>
<td>17</td>
<td>0</td>
</tr>
<tr>
<td>Changes to liabilities for incurred claims</td>
<td>0</td>
<td>97</td>
<td>(34)</td>
</tr>
<tr>
<td>Impairment of assets for insurance acquisition cash flows</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Reversal of impairment of assets for insurance acquisition cash flows</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Investment components</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Insurance service result</td>
<td>(2,507)</td>
<td>17</td>
<td>2,201</td>
</tr>
<tr>
<td>Insurance finance expenses</td>
<td>35</td>
<td>0</td>
<td>33</td>
</tr>
<tr>
<td>Effect of movements in exchange rates</td>
<td>(25)</td>
<td>(7)</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total changes in the statement of comprehensive income</strong></td>
<td>(2,497)</td>
<td>17</td>
<td>2,227</td>
</tr>
<tr>
<td>Cash flows</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Premiums received</td>
<td>2,768</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Claims and other expenses paid</td>
<td>0</td>
<td>(1,311)</td>
<td>0</td>
</tr>
<tr>
<td>Insurance acquisition cash flows</td>
<td>(146)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total cash flows</strong></td>
<td>2,622</td>
<td>(1,311)</td>
<td>0</td>
</tr>
<tr>
<td>Allocation from assets for insurance acquisition cash flows to groups of insurance contracts</td>
<td>(115)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other movements</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Net insurance contract (assets)/liabilities as at 31/12</strong></td>
<td>2,071</td>
<td>17</td>
<td>2,099</td>
</tr>
<tr>
<td>Insurance contract liabilities as at 31/12</td>
<td>2,071</td>
<td>17</td>
<td>2,099</td>
</tr>
<tr>
<td>Insurance contract assets as at 31/12</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Net insurance contract (assets)/liabilities as at 31/12</strong></td>
<td>2,071</td>
<td>17</td>
<td>2,099</td>
</tr>
</tbody>
</table>
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 2.2.6.4 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.

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:

<table>
<thead>
<tr>
<th>Expected timing of derecognition of assets balance as at 31/12</th>
<th>2023</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>In €000</td>
<td>Up to 1 year</td>
<td>1-2 years</td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>121</td>
<td>102</td>
<td>80</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Expected timing of derecognition of assets balance as at 31/12</th>
<th>In €000</th>
<th>Up to 1 year</th>
<th>1-2 years</th>
<th>2-3 years</th>
<th>3-4 years</th>
<th>4-5 years</th>
<th>&gt;5 years</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>131</td>
<td>100</td>
<td>82</td>
<td>59</td>
<td>34</td>
<td>-</td>
<td>406</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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 2.

<table>
<thead>
<tr>
<th>2023</th>
<th>Liabilities for remaining coverage</th>
<th>Liabilities for incurred claims</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Excluding loss component</td>
<td>Loss component</td>
<td>Estimates of the present value of future cash flows</td>
</tr>
<tr>
<td>Insurance contract liabilities as at 01/01</td>
<td>392</td>
<td>-</td>
<td>1,942</td>
</tr>
<tr>
<td>Insurance contract assets as at 01/01</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Net insurance contract (assets)/liabilities as at 01/01</td>
<td>392</td>
<td>-</td>
<td>1,942</td>
</tr>
<tr>
<td>Insurance revenue</td>
<td>(5,245)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Incurred claims and other expenses</td>
<td>-</td>
<td>-</td>
<td>4,175</td>
</tr>
<tr>
<td>Losses on onerous contracts and reversals of those losses</td>
<td>-</td>
<td>-</td>
<td>4,212</td>
</tr>
<tr>
<td>Changes to liabilities for incurred claims</td>
<td>-</td>
<td>-</td>
<td>(37)</td>
</tr>
<tr>
<td>Investment components</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Insurance service result</td>
<td>(5,245)</td>
<td>-</td>
<td>4,175</td>
</tr>
<tr>
<td>Insurance finance expenses</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Effect of movements in exchange rates</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total changes in the statement of comprehensive income</td>
<td>(5,245)</td>
<td>-</td>
<td>4,175</td>
</tr>
<tr>
<td>Cash flows</td>
<td>b</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Premiums received</td>
<td>4,946</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Claims and other expenses paid</td>
<td>-</td>
<td>-</td>
<td>(3,388)</td>
</tr>
<tr>
<td>Insurance acquisition cash flows</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total cash flows</td>
<td>4,946</td>
<td>-</td>
<td>(3,388)</td>
</tr>
<tr>
<td>Other movements</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Net insurance contract (assets)/liabilities as at 31/12</td>
<td>93</td>
<td>-</td>
<td>2,729</td>
</tr>
<tr>
<td>Insurance contract liabilities as at 31/12</td>
<td>93</td>
<td>-</td>
<td>2,729</td>
</tr>
<tr>
<td>Insurance contract assets as at 31/12</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Net insurance contract (assets)/liabilities as at 31/12</td>
<td>93</td>
<td>-</td>
<td>2,729</td>
</tr>
</tbody>
</table>
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)

<table>
<thead>
<tr>
<th>In €000</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Excluding</td>
</tr>
<tr>
<td></td>
<td>loss</td>
</tr>
<tr>
<td></td>
<td>component</td>
</tr>
<tr>
<td>Liabilities for remaining coverage</td>
<td></td>
</tr>
<tr>
<td>Insurance contract liabilities as at 01/01</td>
<td>681</td>
</tr>
<tr>
<td>Insurance contract assets as at 01/01</td>
<td>-</td>
</tr>
<tr>
<td>Net insurance contract (assets)/liabilities as at 01/01</td>
<td>681</td>
</tr>
<tr>
<td>Insurance revenue</td>
<td>(5,182)</td>
</tr>
<tr>
<td>Incurred claims and other expenses</td>
<td>-</td>
</tr>
<tr>
<td>Losses on onerous contracts and reversals of those losses</td>
<td>-</td>
</tr>
<tr>
<td>Changes to liabilities for incurred claims</td>
<td>-</td>
</tr>
<tr>
<td>Investment components</td>
<td>-</td>
</tr>
<tr>
<td>Insurance service result</td>
<td>(5,182)</td>
</tr>
<tr>
<td>Insurance finance expenses</td>
<td>-</td>
</tr>
<tr>
<td>Effect of movements in exchange rates</td>
<td>-</td>
</tr>
<tr>
<td>Total changes in the statement of comprehensive income</td>
<td>(5,182)</td>
</tr>
<tr>
<td>Cash flows</td>
<td></td>
</tr>
<tr>
<td>Premiums received</td>
<td>b</td>
</tr>
<tr>
<td>Claims and other expenses paid</td>
<td>-</td>
</tr>
<tr>
<td>Insurance acquisition cash flows</td>
<td>-</td>
</tr>
<tr>
<td>Total cash flows</td>
<td>4,893</td>
</tr>
<tr>
<td>Other movements</td>
<td>-</td>
</tr>
<tr>
<td>Net insurance contract (assets)/liabilities as at 31/12</td>
<td>392</td>
</tr>
<tr>
<td>Insurance contract liabilities as at 31/12</td>
<td>392</td>
</tr>
<tr>
<td>Insurance contract assets as at 31/12</td>
<td>-</td>
</tr>
<tr>
<td>Net insurance contract (assets)/liabilities as at 31/12</td>
<td>392</td>
</tr>
</tbody>
</table>

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 2.2.5.3, for details.

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 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:

<table>
<thead>
<tr>
<th>2023</th>
<th>Liabilities for remaining coverage</th>
<th>Liabilities for incurred claims</th>
<th>Assets for insurance acquisition cash flows</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>In €000</td>
<td>Excluding loss component</td>
<td>Loss component</td>
<td>Estimates of the present value of future cash flows</td>
<td>Risk adjustment</td>
</tr>
<tr>
<td>Insurance contract liabilities as at 01/01</td>
<td>605</td>
<td>–</td>
<td>480</td>
<td>12</td>
</tr>
<tr>
<td>Insurance contract assets as at 01/01</td>
<td>(49)</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Net insurance contract (assets)/liabilities as at 01/01</td>
<td>556</td>
<td>–</td>
<td>480</td>
<td>12</td>
</tr>
<tr>
<td>Insurance revenue</td>
<td>(1,017)</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Insurance service expenses</td>
<td>109</td>
<td>–</td>
<td>1,083</td>
<td>(1)</td>
</tr>
<tr>
<td>Amortisation of insurance acquisition cash flows</td>
<td>109</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Losses on onerous contracts and reversals of those losses</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Changes to liabilities for incurred claims</td>
<td>–</td>
<td>–</td>
<td>20</td>
<td>(28)</td>
</tr>
<tr>
<td>Impairment of assets for insurance acquisition cash flows</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Reversal of impairment of assets for insurance acquisition cash flows</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Investment components</td>
<td>(74)</td>
<td>–</td>
<td>74</td>
<td>–</td>
</tr>
<tr>
<td>Insurance service result b</td>
<td>(982)</td>
<td>–</td>
<td>1,157</td>
<td>(1)</td>
</tr>
<tr>
<td>Effect of movements in exchange rates</td>
<td>–</td>
<td>–</td>
<td>19</td>
<td>–</td>
</tr>
<tr>
<td>Total changes in the statement of comprehensive income</td>
<td>(982)</td>
<td>–</td>
<td>1,176</td>
<td>(1)</td>
</tr>
<tr>
<td>Cash flows</td>
<td>Premiums received c</td>
<td>1,068</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Insurance acquisition cash flows d</td>
<td>(76)</td>
<td>–</td>
<td>–</td>
<td>(1,163)</td>
</tr>
<tr>
<td>Total cash flows</td>
<td>992</td>
<td>–</td>
<td>(1,163)</td>
<td>–</td>
</tr>
<tr>
<td>Allocation from assets for insurance acquisition cash flows to groups of insurance contracts</td>
<td>(41)</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Other movements</td>
<td>e</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Net insurance contract (assets)/liabilities as at 31/12</td>
<td>525</td>
<td>–</td>
<td>493</td>
<td>11</td>
</tr>
<tr>
<td>Insurance contract liabilities as at 31/12</td>
<td>560</td>
<td>–</td>
<td>493</td>
<td>11</td>
</tr>
<tr>
<td>Insurance contract assets as at 31/12</td>
<td>(35)</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Net insurance contract (assets)/liabilities as at 31/12</td>
<td>525</td>
<td>–</td>
<td>493</td>
<td>11</td>
</tr>
</tbody>
</table>
### 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)

<table>
<thead>
<tr>
<th>In €000</th>
<th>Liabilities for remaining coverage</th>
<th>Liabilities for incurred claims</th>
<th>Assets for insurance acquisition cash flows</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Excluding loss component</td>
<td>Loss component</td>
<td>Estimates of the present value of future cash flows</td>
<td>Risk adjustment</td>
</tr>
<tr>
<td>Insurance contract liabilities as at 01/01</td>
<td>438</td>
<td>-</td>
<td>583</td>
<td>15</td>
</tr>
<tr>
<td>Insurance contract assets as at 01/01</td>
<td>(37)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Net insurance contract (assets)/liabilities as at 01/01</strong></td>
<td>401</td>
<td>-</td>
<td>583</td>
<td>15</td>
</tr>
<tr>
<td>Insurance revenue</td>
<td>(1,162)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Insurance service expenses</td>
<td>125</td>
<td>-</td>
<td>1,241</td>
<td>(3)</td>
</tr>
<tr>
<td>Incurred claims and other expenses</td>
<td>-</td>
<td>-</td>
<td>1,202</td>
<td>30</td>
</tr>
<tr>
<td>Amortisation of insurance acquisition cash flows</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Losses on onerous contracts and reversals of those losses</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Changes to liabilities for incurred claims</td>
<td>-</td>
<td>-</td>
<td>39</td>
<td>(33)</td>
</tr>
<tr>
<td>Impairment of assets for insurance acquisition cash flows</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Reversal of impairment of assets for insurance acquisition cash flows</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Investment components</td>
<td>(84)</td>
<td>-</td>
<td>84</td>
<td>-</td>
</tr>
<tr>
<td>Insurance service result</td>
<td>(1,121)</td>
<td>-</td>
<td>1,325</td>
<td>(3)</td>
</tr>
<tr>
<td>Insurance finance expenses</td>
<td>-</td>
<td>-</td>
<td>17</td>
<td>-</td>
</tr>
<tr>
<td><strong>Effect of movements in exchange rates</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total changes in the statement of comprehensive income</strong></td>
<td>(1,121)</td>
<td>-</td>
<td>1,342</td>
<td>(3)</td>
</tr>
<tr>
<td><strong>Cash flows</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Premiums received</td>
<td>1,424</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Claims and other expenses paid</td>
<td>-</td>
<td>-</td>
<td>(1,445)</td>
<td>-</td>
</tr>
<tr>
<td><strong>Insurance acquisition cash flows</strong></td>
<td>(101)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total cash flows</strong></td>
<td>1,323</td>
<td>-</td>
<td>(1,445)</td>
<td>-</td>
</tr>
<tr>
<td><strong>Allocation from assets for insurance acquisition cash flows to groups of insurance contracts</strong></td>
<td>(47)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Other movements</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Net insurance contract (assets)/liabilities as at 31/12</strong></td>
<td>556</td>
<td>-</td>
<td>480</td>
<td>12</td>
</tr>
<tr>
<td>Insurance contract liabilities as at 31/12</td>
<td>605</td>
<td>-</td>
<td>480</td>
<td>12</td>
</tr>
<tr>
<td>Insurance contract assets as at 31/12</td>
<td>(49)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Net insurance contract (assets)/liabilities as at 31/12</strong></td>
<td>556</td>
<td>-</td>
<td>480</td>
<td>12</td>
</tr>
</tbody>
</table>

**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.

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.
### 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. 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:

<table>
<thead>
<tr>
<th>In €000</th>
<th>Assets for remaining coverage</th>
<th>Amounts recoverable on incurred claims</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Excluding loss-recovery component</td>
<td>Loss-recovery component</td>
<td>Estimates of the present value of future cash flows</td>
</tr>
<tr>
<td>Reinsurance contract assets as at 01/01</td>
<td>951</td>
<td>15</td>
<td>431</td>
</tr>
<tr>
<td>Reinsurance contract liabilities as at 01/01</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Net reinsurance contract assets/(liabilities) as at 01/01</strong></td>
<td><strong>951</strong></td>
<td><strong>15</strong></td>
<td><strong>431</strong></td>
</tr>
<tr>
<td>An allocation of reinsurance premiums</td>
<td>(633)</td>
<td>(633)</td>
<td><strong>IFRS 17.103(a)</strong></td>
</tr>
<tr>
<td>Amounts recoverable from reinsurers for incurred claims</td>
<td>-</td>
<td>(15)</td>
<td>642</td>
</tr>
<tr>
<td>Amounts recoverable for incurred claims and other expenses</td>
<td>-</td>
<td>-</td>
<td>588</td>
</tr>
<tr>
<td>Loss-recovery on onerous underlying contracts and adjustments</td>
<td>-</td>
<td>(15)</td>
<td>-</td>
</tr>
<tr>
<td>Changes to amounts recoverable for incurred claims</td>
<td>-</td>
<td>-</td>
<td>54</td>
</tr>
<tr>
<td>Reinsurance Investment components</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Net income or expense from reinsurance contracts held</strong></td>
<td><strong>(633)</strong></td>
<td><strong>(15)</strong></td>
<td><strong>642</strong></td>
</tr>
<tr>
<td>Reinsurance finance income</td>
<td>15</td>
<td>-</td>
<td>16</td>
</tr>
<tr>
<td>Effect of changes in non-performance risk of reinsurers</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Effect of movements in exchange rates</strong></td>
<td><strong>3</strong></td>
<td><strong>-</strong></td>
<td><strong>2</strong></td>
</tr>
<tr>
<td><strong>Total changes in the statement of comprehensive income</strong></td>
<td><strong>(614)</strong></td>
<td><strong>(15)</strong></td>
<td><strong>660</strong></td>
</tr>
</tbody>
</table>

### Cash flows

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Premiums paid</td>
<td>131</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Amounts received</td>
<td>-</td>
<td>-</td>
<td>(759)</td>
</tr>
<tr>
<td><strong>Total cash flows</strong></td>
<td><strong>131</strong></td>
<td><strong>-</strong></td>
<td><strong>(759)</strong></td>
</tr>
</tbody>
</table>

Other movements:

| | | |
|---|---|
| Net reinsurance contract assets/(liabilities) as at 31/12 | 467 | - |
| Reinsurance contract assets as at 31/12 | 467 | - | 332 | 8 | 808 |
| Reinsurance contract liabilities as at 31/12 | - | - | - | - | - |

Net reinsurance contract assets/(liabilities) as at 31/12:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Net reinsurance contract assets/(liabilities) as at 31/12</td>
<td>467</td>
<td>-</td>
</tr>
</tbody>
</table>
### Notes to the Financial Statements

#### 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)

<table>
<thead>
<tr>
<th></th>
<th>Assets for remaining coverage (Excluding loss-recovery component)</th>
<th>Amounts recoverable on incurred claims</th>
<th>Total (IFRS 17.100(a)(c))</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Estimates of the present value of future cash flows</td>
<td>Risk adjustment</td>
</tr>
<tr>
<td><strong>In €000</strong></td>
<td></td>
<td>(IFRS 17.99(b))</td>
<td>(IFRS 17.103(a))</td>
</tr>
<tr>
<td>Reinsurance contract assets as at 01/01</td>
<td>1,150</td>
<td>245</td>
<td>6</td>
</tr>
<tr>
<td>Reinsurance contract liabilities as at 01/01</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Net reinsurance contract assets/(liabilities) as at 01/01</strong></td>
<td>1,150</td>
<td>245</td>
<td>6</td>
</tr>
</tbody>
</table>

**An allocation of reinsurance premiums**

- Amounts recoverable from reinsurers for incurred claims
  - Amounts recoverable for incurred claims and other expenses
    - Loss-recovery on onerous underlying contracts and adjustments
      - Changes to amounts recoverable for incurred claims
        - Reinsurance Investment components

**Net income or expense from reinsurance contracts held**

- (966) 15 913 5 (32)

**Reinsurance finance income**

- (IFRS 17.105(c))

- (IFRS 17.105(b))

**Effect of changes in non-performance risk of reinsurers**

- (IFRS 17.105(d))

**Total changes in the statement of comprehensive income**

- (956) 15 913 5 (23)

**Cash flows**

- (IFRS 17.105(a))

- (IFRS 17.105(a)(X))

**Net reinsurance contract assets/(liabilities) as at 31/12**

<table>
<thead>
<tr>
<th></th>
<th>Excluding loss-recovery component</th>
<th>Loss-recovery component</th>
<th>(IFRS 17.99(b))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinsurance contract assets as at 31/12</td>
<td>951 15 431 11 1,408</td>
<td></td>
<td>(IFRS 17.99(k))</td>
</tr>
<tr>
<td>Reinsurance contract liabilities as at 31/12</td>
<td>951 15 431 11 1,408</td>
<td></td>
<td>(IFRS 17.99(k))</td>
</tr>
</tbody>
</table>

**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 2.2.5.4 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.

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.
# Appendix 1 - Scope of the Publication

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:

<table>
<thead>
<tr>
<th>Reference</th>
<th>Guidance</th>
<th>New/extended/existing</th>
<th>Link to the disclosure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Insurance and reinsurance contracts</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IFRS 17.78</td>
<td>Present separately in the statement of financial position the carrying amount of portfolios of: (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.</td>
<td>New</td>
<td>Statement of financial position</td>
</tr>
<tr>
<td>IFRS 17.80</td>
<td>Disaggregate the amounts recognised in the statement(s) of profit or loss and other comprehensive income into: (a) an insurance service result, comprising insurance revenue and insurance service expenses; and (b) insurance finance income or expenses.</td>
<td>New</td>
<td>Statement of profit or loss and other comprehensive income</td>
</tr>
<tr>
<td>IFRS 17.82</td>
<td>Present income or expenses from reinsurance contracts held separately from the expenses or income from insurance contracts issued.</td>
<td>New</td>
<td>Statement of profit or loss and other comprehensive income</td>
</tr>
<tr>
<td>IFRS 17.83-85</td>
<td>Present in profit or loss: 1. Insurance revenue arising from groups of insurance contracts that depict the provision of services 2. Insurance service expenses arising from a group of insurance contracts issued, comprising incurred claims, other incurred insurance service expenses and other amounts</td>
<td>New</td>
<td>Statement of profit or loss and other comprehensive income</td>
</tr>
<tr>
<td>IFRS 17.86</td>
<td>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.</td>
<td>New</td>
<td>Statement of profit or loss and other comprehensive income</td>
</tr>
<tr>
<td>IFRS 17.88-90</td>
<td>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.</td>
<td>Existing</td>
<td>Statement of profit or loss and other comprehensive income</td>
</tr>
<tr>
<td>IFRS 17.97</td>
<td>If an entity uses the premium allocation approach, it shall disclose: (a) which of the criteria in premium allocation approach it has satisfied; (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.</td>
<td>New</td>
<td>Summary of significant accounting policies - Note 2</td>
</tr>
<tr>
<td>IFRS 17.98-99</td>
<td>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. 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.</td>
<td>New</td>
<td>Insurance and reinsurance contracts - Note 11</td>
</tr>
<tr>
<td>Reference</td>
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<tr>
<td>IFRS 17.100, 103, 105</td>
<td>Disclose reconciliations from the opening to the closing balances separately for each of: (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 (c) investment components excluded from insurance 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.</td>
<td>New</td>
<td>Insurance and reinsurance contracts - Note 11</td>
</tr>
<tr>
<td>IFRS 17.101, 104, 105</td>
<td>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: (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:</td>
<td>New</td>
<td>Not disclosed, refer to Good Life Insurance - General Model publication</td>
</tr>
</tbody>
</table>
### Appendix 1 - Scope of the Publication

<table>
<thead>
<tr>
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</table>
| IFRS 17.105A, 105B | (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:  
(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. | New | Insurance and reinsurance contracts - Note 11 |
| 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:  
(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. | New | Not disclosed, refer to Good Life Insurance - General Model publication |
| 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:  
(a) the estimates of the present value of future cash outflows, showing separately the amount of the insurance acquisition cash flows; | New | Not disclosed, refer to Good Life Insurance - General Model publication |
<table>
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<tbody>
<tr>
<td>IFRS 17.109</td>
<td>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. Such information shall be provided separately for insurance contracts issued and reinsurance contracts held.</td>
<td>New</td>
<td>Not disclosed, refer to Good Life Insurance - General Model publication</td>
</tr>
<tr>
<td>IFRS 17.109A</td>
<td>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.</td>
<td>New</td>
<td>Insurance and reinsurance contracts - Note 11</td>
</tr>
<tr>
<td>IFRS 17.110</td>
<td>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.</td>
<td>New</td>
<td>Total investment income and net insurance financial result - Note 7</td>
</tr>
<tr>
<td>IFRS 17.111</td>
<td>For contracts with direct participation features, the entity shall describe the composition of the underlying items and disclose their fair value.</td>
<td>New</td>
<td>Not disclosed, subject to future publication (Variable fee approach)</td>
</tr>
<tr>
<td>IFRS 17.112</td>
<td>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.</td>
<td>New</td>
<td>Not disclosed, subject to future publication (Variable fee approach)</td>
</tr>
<tr>
<td>IFRS 17.113</td>
<td>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: (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.</td>
<td>New</td>
<td>Not disclosed, subject to future publication (Variable fee approach)</td>
</tr>
<tr>
<td>IFRS 17.114</td>
<td>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 to which the entity has applied the fair value approach; and (c) all other insurance contracts.</td>
<td>New</td>
<td>Not disclosed, refer to Good Life Insurance - General Model publication</td>
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### Appendix 1 - Scope of the Publication

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<tr>
<td>IFRS 17.115</td>
<td>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.</td>
<td>New</td>
<td>Not disclosed, refer to Good Life Insurance - General Model publication</td>
</tr>
<tr>
<td>IFRS 17.116</td>
<td>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.</td>
<td>New</td>
<td>Not disclosed, refer to Good Life Insurance - General Model publication</td>
</tr>
<tr>
<td>IFRS 17.117</td>
<td>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 are disaggregated into an insurance service component and an insurance finance component or are presented in full in the insurance service result; (iii) to determine discount rates; (iv) to determine investment components; (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.</td>
<td>Expanded</td>
<td>Significant judgements and estimates - Note 5</td>
</tr>
<tr>
<td>IFRS 17.118</td>
<td>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.</td>
<td>New</td>
<td>Summary of significant accounting policies - Note 2.2.6.4</td>
</tr>
<tr>
<td>IFRS 17.119</td>
<td>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.</td>
<td>New</td>
<td>Significant judgements and estimates - Note 5.1.4</td>
</tr>
<tr>
<td>IFRS 17.120</td>
<td>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.</td>
<td>New</td>
<td>Significant judgements and estimates - Note 5.1.3</td>
</tr>
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<tr>
<td>IFRS 17.121, 122, 124</td>
<td>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. 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.</td>
<td>Existing</td>
<td>Insurance and financial risk - Note 3.1, 3.2</td>
</tr>
<tr>
<td>IFRS 17.125</td>
<td>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 (b) insurance and market risks (c) insurance risk - claims development (d) credit risk (e) liquidity risk</td>
<td>Existing</td>
<td>Insurance and financial risk - Note 3.1, 3.2</td>
</tr>
<tr>
<td>IFRS 17.126</td>
<td>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.</td>
<td>Expanded</td>
<td>Capital - Note 4</td>
</tr>
<tr>
<td>IFRS 17.127</td>
<td>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.</td>
<td>Existing</td>
<td>Insurance and financial risk - Note 3.1, 3.2</td>
</tr>
<tr>
<td>IFRS 17.128(a)(ii)</td>
<td>Disclose information about sensitivities to changes in risk variables arising from contracts within the scope of IFRS 17. To comply with this requirement, disclose: (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.</td>
<td>Expanded</td>
<td>Financial risk - Note 3.2</td>
</tr>
<tr>
<td>IFRS 17.128 (except 128(a)(ii)), 129</td>
<td>Disclose information about sensitivities to changes in risk variables arising from contracts within the scope of IFRS 17. To comply with this requirement, disclose: (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:</td>
<td>Existing</td>
<td>Insurance and financial risk - Note 3.1, 3.2</td>
</tr>
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<tr>
<td>IFRS 17.130</td>
<td>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 entity discloses applying paragraph 100(c).</td>
<td>Existing</td>
<td>Insurance risk - Note Error! Reference source not found.</td>
</tr>
<tr>
<td>IFRS 17.131</td>
<td>For credit risk that arises from contracts within the scope 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 (b) information about the credit quality of reinsurance contracts held that are assets.</td>
<td>Existing</td>
<td>Financial risk - Note 3.2.4</td>
</tr>
<tr>
<td>IFRS 17.132(a)</td>
<td>For liquidity risk arising from contracts within the scope of IFRS 17, disclose: (a) a description of how the entity manages the liquidity risk.</td>
<td>Existing</td>
<td>Financial risk - Note 3.2.1</td>
</tr>
<tr>
<td>IFRS 17.132(b)</td>
<td>For liquidity risk arising from contracts within the scope of 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.</td>
<td>Expanded</td>
<td>Financial risk - Note 3.2.1</td>
</tr>
<tr>
<td>IFRS 17.132(c)</td>
<td>(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.</td>
<td>New</td>
<td>Financial risk - Note 3.2.1</td>
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<td>Guidance</td>
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<td><strong>Financial assets and financial liabilities</strong></td>
<td>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: (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. (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.</td>
<td>New</td>
<td>Statement of financial position</td>
</tr>
<tr>
<td>IFRS 7.9, BS(aa)</td>
<td>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: (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. (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: (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.</td>
<td>Existing</td>
<td>Not in scope of this publication as considered unlikely for an insurer to regularly require this to be disclosed</td>
</tr>
<tr>
<td>IFRS 7.10</td>
<td>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: (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.</td>
<td>New</td>
<td>Not applicable for this publication as no financial liabilities classified as FVPL</td>
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<tr>
<td>IFRS 7.10A</td>
<td>(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.</td>
<td>Existing</td>
<td>Not applicable for this publication as no financial liabilities classified as FVPL</td>
</tr>
<tr>
<td>IFRS 7.11</td>
<td>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: (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.</td>
<td>Existing</td>
<td>New</td>
</tr>
<tr>
<td>IFRS 7.11A, 11B</td>
<td>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: (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. (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.</td>
<td>New</td>
<td>Not applicable for this publication as no equity instruments held at FVOCI</td>
</tr>
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<td>Reference</td>
<td>Guidance</td>
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<td>(b) The fair value of the investments at the date of derecognition. (c) The cumulative gain or loss on disposal.</td>
<td>New</td>
<td>Not applicable for this publication – no reclassifications are assumed to have occurred</td>
</tr>
<tr>
<td></td>
<td>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: (a) The date of reclassification. (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: (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 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.</td>
<td>New</td>
<td></td>
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<tr>
<td>IFRS 7.12B, 12C, 12D</td>
<td></td>
<td></td>
<td>Not in scope of current publication (refer to current Good Insurance Note 46)</td>
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<td></td>
<td>Offsetting financial assets and financial liabilities</td>
<td>Existing</td>
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</tr>
<tr>
<td>IFRS 7.13A-F</td>
<td>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. 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</td>
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</table>
| IFRS 7.14, 15, 38 | **Collateral**
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
(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;
(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. | Existing | Not in scope of current publication (refer to current Good Insurance Note 28, 47) |

| 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 9 |

| 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;
(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. | Existing | Not in scope of this publication as considered unlikely for an insurer to regularly require this to be disclosed |
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<tr>
<td>IFRS 7.20</td>
<td>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).</td>
<td>Categories and scoping have been amended</td>
<td>Statement of profit or loss and other comprehensive income and Total investment income and net insurance financial result - Note 7</td>
</tr>
<tr>
<td>IFRS 7.20A</td>
<td>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 liabilities measured at amortised cost. (vi) financial assets measured at amortised cost. (vii) investments in equity instruments designated 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 in accordance with paragraph 4.1.2A of IFRS 9, showing separately the amount of gain or loss recognised in other comprehensive income during the period and the amount reclassified upon derecognition from accumulated 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 amortised cost or that are measured at fair value through other comprehensive income in accordance with paragraph 4.1.2A of IFRS 9 (showing these amounts separately); or financial liabilities that are not measured 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; and (ii) trust and other fiduciary activities that result in the holding or investing of assets on behalf of individuals, trusts, retirement benefit plans, and other institutions.</td>
<td>New</td>
<td>Total investment income and net insurance financial result - Note 7</td>
</tr>
<tr>
<td>IFRS 7.21</td>
<td>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.</td>
<td>New (as the approach to classification has changed)</td>
<td>Summary of significant accounting policies - Note 2.3</td>
</tr>
<tr>
<td>IFRS 7.21A-24G</td>
<td>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.</td>
<td>New (as the approach to classification has changed)</td>
<td>Summary of significant accounting policies - Note 2.3</td>
</tr>
<tr>
<td>IFRS 7.21A-24G</td>
<td>Hedge accounting</td>
<td>Existing</td>
<td>Not in scope of current publication (refer to current Good Insurance Note 28)</td>
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<td>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].</td>
<td>Existing</td>
<td>Not in scope of current publication (refer to current Good Insurance Note 27, 28, 30, 33, 35, 40, 41, 43)</td>
</tr>
<tr>
<td>IFRS 7.25-30</td>
<td>Fair value Except where the following apply: (a) the carrying amount is a reasonable approximation of fair value; or (d) for lease liabilities.</td>
<td>Existing</td>
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<td>for each class of financial assets and financial 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. 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.</td>
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<td>IFRS 7.31-35</td>
<td>Risks arising from financial instruments 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. 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: For each type of risk arising from financial instruments, an entity shall disclose: (a) the exposures to risk and how they arise;</td>
<td>Existing</td>
<td>Financial risk - Note 3.2</td>
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<td>Reference</td>
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<td>(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.</td>
<td>New</td>
<td>Financial risk - Note 3.2.4</td>
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<td>Detailed credit risk disclosures based on new IFRS 9 impairment requirements, covering: (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: (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.</td>
<td>New</td>
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<td>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: (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 qualify 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. (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).</td>
<td>Scope reduced to only require disclosure for financial instruments for which IFRS 9 impairment requirements are not applied.</td>
<td>Not in scope of current publication (refer to current Good Insurance Note 47)</td>
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<td>Liquidity risk Disclose:</td>
<td>Existing</td>
<td>Financial risk - Note 3.2.1</td>
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|            | (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). | New/extended/existing | Existing | Financial risk - Note 3.2.2 |
| IFRS 7.40-42 | **Market risk**  
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;  
(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. | Existing | Not in scope of this publication as considered unlikely for an insurer to regularly require this to be disclosed |
| IFRS 7.42A-H | **Transfers of financial assets**  
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.  
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  
(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. | New | Changes in accounting policies and disclosures - Note 1.1.3 |
| IFRS 7.42L-M, O,P | **Initial application of IFRS 9**  
Disclose the following information for each class of financial assets and financial liabilities as at the date of initial application: | New | |

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<td>(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.</td>
<td>New</td>
<td>Not applicable for this publication - no instruments have been reclassified out of the FVPL category as a result of transition</td>
</tr>
<tr>
<td>IFRS 7.42N</td>
<td>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: (a) the effective interest rate determined on the date of initial application; and (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</td>
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| IFRS 7.42R-S | 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:  
(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.  
(b) the exception for prepayment features in paragraph B4.1.12 of AASB 9 until those financial assets are derecognised. | New                   | *Not applicable for this publication - upon transition, the requirements for modification and prepayment were not determined to be impracticable* |
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WHAT DO WE KNOW ABOUT
MARKET DISCIPLINE IN INSURANCE?

MARTIN ELING

WORKING PAPERS ON RISK MANAGEMENT AND INSURANCE NO. 101

EDITED BY HATO SCHMEISER
CHAIR FOR RISK MANAGEMENT AND INSURANCE

NOVEMBER 2011
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

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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 Merrill, 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.

<table>
<thead>
<tr>
<th>Who?</th>
<th>Customers and investors (direct monitoring and influencing)</th>
<th>Intermediaries and evaluators (direct and indirect monitoring and influencing)</th>
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<td>How?</td>
<td>Risk-sensitive customer demand</td>
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<td>New recommendation</td>
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<td>Relevance in insurance</td>
<td>High</td>
<td>Limited</td>
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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; 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. 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.

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.

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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 (input variable) | Signal given by (output variable) | Market reaction
---|---|---
Investor-driven market discipline
Annual and interim reports with outlook | Company | Investors’ willingness to pay reflected in Stock prices
Ad-hoc disclosure | Company | Bond yields
Director’s dealings | Company | Analysts’ comments
Analysts’ comments | Analysts | Company financial strength ratings | Rating agencies
Takeover bids | Competitor | Ad-hoc disclosure Company

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). 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-
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—one 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. 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

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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, exces-
sive 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 liter-
ature. 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 reduc-
ing 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 litera-
ture that might be of relevance to the insurance industry. First, the strength of market disci-
pline 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 competi-
tion, 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, com-
pared 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 com-
plex 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).
Bank Equities and Investor Risk Perceptions: Potential Interactions of Market Efficiency and the International Debt Crisis

The reaction of bank stock prices to international debt crises and to the market efficiency in the banking sector is examined. The results suggest that the market efficiency does not fully reflect the information about the riskiness of bank stocks. The percentage of Latin American loans to total assets has a significant, negative impact on returns in 1982; energy loans had a negative impact on returns in the first half of the 1980s. The capital adequacy ratio is positively and significantly related to stock prices. Variability of stock prices helps explain CD rates; for the first time, the relationship between bank stock prices and CD rates is explained. The findings suggest that 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 outweighed by the possibility of losing charter value. The 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 institutions. Sensitivity of SD spreads to measures of stand-alone risk has increased from the first to the second period. The results also 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 institutions. The results suggest that the market efficiency does not fully reflect the information about the riskiness of bank stocks. The findings suggest that 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 outweighed by the possibility of losing charter value. The 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 institutions. Sensitivity of SD spreads to measures of stand-alone risk has increased from the first to the second period. The results also 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 institutions.
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<tr>
<th>#</th>
<th>Authors</th>
<th>Title</th>
<th>Country</th>
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<tbody>
<tr>
<td>25</td>
<td>Crane (1976), J of Bank Research</td>
<td>A Study of Interest Rate Spreads in the 1974 CD Market</td>
<td>US</td>
<td>evidence for MD is weak in uninsured deposits</td>
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<td>26</td>
<td>Hannan and Hanweck (1988), J of Money, Credit and Banking</td>
<td>Bank Insolvency Risk and the Market for Large Certificates of Deposit</td>
<td>US</td>
<td>evidence for MD is weak in uninsured deposits</td>
</tr>
<tr>
<td>28</td>
<td>Ellis and Flannery (1992), J of Monetary Economics</td>
<td>Does the debt market assess large banks' risk? Time series evidence from money market</td>
<td>US</td>
<td>evidence for MD in CD rates</td>
</tr>
<tr>
<td>31</td>
<td>Ellis and Flannery (1992), J of Monetary Economics</td>
<td>Investigates the relationship between CD rates as a measure of bank risk and the CAM EL scores assigned to a bank as a result of an onsite examination; results suggest that CAM EL ratings are primarily proxies for available market information about the quality of a bank.</td>
<td>US</td>
<td>evidence for MD in CD rates</td>
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<td>32</td>
<td>Ellis and Flannery (1992), J of Monetary Economics</td>
<td>US evidence for MD in CD rates</td>
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<td>evidence for MD in CD rates</td>
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<td>33</td>
<td>Ellis and Flannery (1992), J of Monetary Economics</td>
<td>CAM EL Ratings and the CD Market</td>
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<td>evidence for MD in CD rates</td>
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<td>34</td>
<td>Ellis and Flannery (1992), J of Monetary Economics</td>
<td>CAM EL Ratings and the CD Market</td>
<td>US</td>
<td>evidence for MD in CD rates</td>
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<td>35</td>
<td>Ellis and Flannery (1992), J of Monetary Economics</td>
<td>CAM EL Ratings and the CD Market</td>
<td>US</td>
<td>evidence for MD in CD rates</td>
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<td>36</td>
<td>Ellis and Flannery (1992), J of Monetary Economics</td>
<td>CAM EL Ratings and the CD Market</td>
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<td>evidence for MD in CD rates</td>
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<tr>
<td>37</td>
<td>Ellis and Flannery (1992), J of Monetary Economics</td>
<td>CAM EL Ratings and the CD Market</td>
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<td>38</td>
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<td>39</td>
<td>Ellis and Flannery (1992), J of Monetary Economics</td>
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<td>40</td>
<td>Ellis and Flannery (1992), J of Monetary Economics</td>
<td>CAM EL Ratings and the CD Market</td>
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<td>41</td>
<td>Ellis and Flannery (1992), J of Monetary Economics</td>
<td>CAM EL Ratings and the CD Market</td>
<td>US</td>
<td>evidence for MD in CD rates</td>
</tr>
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</table>

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.
<table>
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<th>#</th>
<th>Authors</th>
<th>Title</th>
<th>Country</th>
<th>Main results</th>
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</thead>
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<tr>
<td>1</td>
<td>Singh and Power (1992)</td>
<td>The Effects of Best’s Rating Changes on Insurance Company Stock Prices</td>
<td>US</td>
<td>no evidence for MD ... in stock prices</td>
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<td>2</td>
<td>Fenn and Cole (1994)</td>
<td>Announcements of asset-quality problems and contagion effects in the life insurance industry</td>
<td>US</td>
<td>evidence for MD ... in stock prices</td>
</tr>
<tr>
<td>3</td>
<td>Brewer and Jackson (2002)</td>
<td>Effects of Financial Distress Announcements: Inter-Industry Contagion and the Competitive</td>
<td>US</td>
<td>evidence for MD ... in stock prices</td>
</tr>
<tr>
<td>5</td>
<td>Halek and Eckles (2011)</td>
<td>Determinants of Abnormal Reactions to Insurer Rating Downgrades</td>
<td>US</td>
<td>evidence for MD ... in stock prices</td>
</tr>
<tr>
<td>9</td>
<td>Carson, Dorian, and Dumm (2016)</td>
<td>MD in the Individual Annuity Market</td>
<td>US</td>
<td>evidence for MD ... in the price of annuities</td>
</tr>
<tr>
<td>10</td>
<td>Zarajani (2002)</td>
<td>MD and Government Guarantees in Life Insurance</td>
<td>US</td>
<td>evidence for MD ... in lapse</td>
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<td>12</td>
<td>Baranoff and Sager (2007)</td>
<td>MD in Life Insurance: Insurers’ Reaction to Rating Downgrades in the Context of Enterprise</td>
<td>US</td>
<td>evidence for MD ... in premium growth (number of policies), life insurance</td>
</tr>
<tr>
<td>13</td>
<td>Elng and Schmit (2019)</td>
<td>Does Surplus Participation Reflect Market Discipline?</td>
<td>Germany</td>
<td>evidence for MD ... in premium growth, lapse</td>
</tr>
<tr>
<td>15</td>
<td>Lee, Mayers, and Smith (1997)</td>
<td>Guaranty funds and risk-taking Evidence from the insurance industry</td>
<td>US</td>
<td>safety net reduces ... impact of guarantee funds</td>
</tr>
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<td>18</td>
<td>Liu, Epermanis, and Cox (2005)</td>
<td>Agency Conflicts and MD: Evidence from Guaranteed Investment Contracts</td>
<td>US</td>
<td>evidence for MD ... in guaranteed investment contracts</td>
</tr>
<tr>
<td>19</td>
<td>Pottier and Sommier (2008)</td>
<td>Opaqueness in the Insurance Industry: Why Are Some Insurers Harder to Evaluate than Others?</td>
<td>US</td>
<td>evidence for MD ... in regard to asset risk and ratings</td>
</tr>
<tr>
<td>20</td>
<td>Lin, Oppenheimer, and Chen (2008)</td>
<td>Intangible Assets, Going-for-broke and Asset Risk Taking of Property and Liability Insurance</td>
<td>US</td>
<td>evidence for MD ... in regard to asset risk and ratings</td>
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</table>

**Equity prices**

2. Fenn and Cole (1994) - Announcements of asset-quality problems and contagion effects in the life insurance industry
5. Halek and Eckles (2011) - Determinants of Abnormal Reactions to Insurer Rating Downgrades

**Price of insurance**

20. Lin, Oppenheimer, and Chen (2008) - Intangible Assets, Going-for-broke and Asset Risk Taking of Property and Liability Insurance

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 non-life 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.
References


Insurance Regulation in the United States and the European Union
A Comparison

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November 2009
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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 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 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. 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.
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 three-piller 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. 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. Each state also retains the principal responsibility for regulating the market practices of all insurers licensed to operate in their jurisdictions and can suspend or revoke their licenses. 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.
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. 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 rules-based 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 fixed-minimum requirement. 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:

\[ RBC = 0.5[R_0 + \sqrt{R_1^2 + R_2^2 + R_3^2 + R_4^2 + R_5^2}] \]

(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. Under the RBC model law, 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 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.

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

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<th>Table 1: Risk-Based Capital (RBC) Action Levels</th>
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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. 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. 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 US.

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. 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. 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.

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. 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. This reflects the multilayered nature of financial regulation and monitoring of US 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 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.

Importantly, NAIC analysts use these scores and other information to identify companies that deserve special attention. 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 com-
pel 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 non-
domiciliary regulators to suspend or terminate an
insurer’s license to write business in their jurisdic-
tions. This could effectively force the domiciliary
regulator’s hand, as license suspensions and termi-
nations would quickly lead to a company’s demise
and propel it into receivership.

Regulators use additional tools and informa-
tion 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. Additional sources of
information may be tapped, including Securities
and Exchange Commission (SEC) filings, claims-
paying ability ratings, complaint ratios, market
conduct reports, correspondence from competi-
tors 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 ap-
proach as most rules are stated in quantitative
terms. Importantly, US regulators tend not to
engage in consultations with an insurance com-
pany’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.

There are two categories of regulatory actions
with respect to troubled companies: (1) actions
to prevent a financially troubled insurer from be-
coming insolvent and (2) delinquency proceed-
ings against an insurer for the purpose of conserv-
ing, rehabilitating, reorganizing, or liquidating
the company. Actions within the first category in-
clude 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 oth-
ers 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 be-
comes 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 rehabili-
tate a company to maintain availability of cover-
age 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 rehabili-
tation 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 compel-
lng 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. Only certain lines of insurance are covered, and there are limits on the amount of coverage for each claim. Insurance policies purchased by individuals and small businesses tend to have greater coverage than insurance purchased by large commercial buyers. 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’ “claims-
paying 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 property-casualty 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.\textsuperscript{28} This reality has motivated many insurers to advocate some form of federal regulation.\textsuperscript{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.\textsuperscript{30} Non-regulatory 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 dealings with troubled insurance companies.\textsuperscript{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.\textsuperscript{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 ra-
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). 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 claims-paying 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. 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 Tenyson (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.

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.

Quantitative Regulations for Capital Requirements

The Third Generation Insurance Directive of 1994 did not directly address solvency issues. Instead, the directive recommended that the rules-based 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 and discussed. 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 so-called “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 manage-
ment 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):

\[
\text{SRC} = \text{BSCR} + \text{OpRisk} + \text{LAC} = \sqrt{\sum \sum \text{Corr}_{ij} \cdot \text{SCR}_i \cdot \text{SCR}_j + \text{OpRisk} + \text{LAC}}
\]

The factor Corr_{ij} denotes different items in a 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 principle-based approach instead of using strict rules such as those required in the US risk-based capital standards. A major drawback of standard rules-based models is their lack of flexibility to handle individual situations, limiting the ability to assess the wide range of insurance risk profiles. Rule-based 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 on-site 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
Insurance Regulation in the U.S. and E.U.

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 (€2 million for life, €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:

- 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-
tarian insurance companies for the period of 1994–1999.

- 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, El-ling 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; Distin-guin 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 long-term 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 (Elting, 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. 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 principles-based 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


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).


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-

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. 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.

18. 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.

19. 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. One exception to this is mandatory stress testing by life insurers to demonstrate the adequacy of their policy reserves.

20. 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.

21. 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.

22. 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.

23. 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.


26. 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 Center on Entrepreneurial Innovation pursues research into entrepreneurship, the dynamic process of markets and technological innovation without regard to prevailing popular or political biases and trends. The goal is to explore important areas that might otherwise be ignored, including questions normally considered "out-of-the-box" or controversial, but which might well be crucial to understanding and getting at real answers and lasting solutions. As a result, the Center aims to cut through the intellectual poverty, noise, and spin of special-interest-driven public policy in the US and elsewhere.

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Feldblum, S., “Rating Agencies,” CAS Study Note, October 3, 2011, pp. 1-7 and 14-15 (stop at Best’s Capital Adequacy Ratio) and Appendix A.
The Discriminating (Pricing) Actuary

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Date of this Draft: March 16, 2021

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 ele-
ments: 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 insur-
ers 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 mem-
ers 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
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, Schwarz, 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 ac-
counts), 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.

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Table 5.1: Genetic Testing Prohibitions by Country. Source: Klein (2017)

<table>
<thead>
<tr>
<th>Regulation Category</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>No regulation</td>
<td>China, Finland, India, Spain, United States</td>
</tr>
<tr>
<td>No regulation with written or unwritten codes of conduct</td>
<td>Greece, Japan</td>
</tr>
<tr>
<td>from insurance industry groups</td>
<td></td>
</tr>
<tr>
<td>Prohibitions on insurers requiring applicants to take a genetic test and prohibited</td>
<td>Australia*</td>
</tr>
<tr>
<td>on discrimination if the applicant refuses to take a test</td>
<td></td>
</tr>
<tr>
<td>Prohibitions or moratoriums on using results from existing tests when policies are</td>
<td>Germany, Netherlands, Switzerland,</td>
</tr>
<tr>
<td>below certain limits</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>Prohibitions or moratoriums on using results from existing tests at all, sometimes</td>
<td>Austria, Belgium, Canada, Denmark,</td>
</tr>
<tr>
<td>including use of family history information</td>
<td>France, Ireland, Poland</td>
</tr>
<tr>
<td></td>
<td>Portugal, Singapore</td>
</tr>
</tbody>
</table>

* 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, \( y = 1 \beta_0 + X_P \beta_1 + X_{NP} \beta_2 + \epsilon \), with predictors of the form

\[
\hat{y}_{full} = 1 b_0 + X_P b_1 + X_{NP} b_2.
\] (1)

In the presence of regulatory restrictions, the actuary could consider a restricted model, \( y = 1 \beta_{0,1} + X_{NP} \beta_{2,1} + \epsilon_1 \), with predictors of the form

\[
\hat{y}_{restricted} = 1 b_{0,1} + X_{NP} b_{2,1}.
\] (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

\[
\hat{y}_{PS} = 1 b_0 + \bar{X}_P b_1 + X_{NP} b_2,
\] (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 \( X_1 = (1 \ X_P) \), the projection matrix \( Q = I - X_1 (X'_1 X_1)^{-1}X'_1 \) and the transformed variables \( X^*_{NP} = Q X_{NP} \). Then, with the new variables, one uses the usual least square procedures to get \( b^*_2 = (X^*_{NP} X^*_{NP})^{-1} X^*_{NP} y \). Some standard matrix algebra shows that \( b^*_2 = b_2 \), 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

\[
\hat{y}_{FH} = 1 \bar{y} + X^*_{NP} b_2.
\] (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 \( \mathcal{R} \) package \texttt{CASdatasets} that slightly differs from the de Jong and Heller book in the coding of the variables. Statistical code, using the freely available software \( \mathcal{R} \) is in the Appendix of a supporting document Frees and Huang (2021).

For this analysis of claims severity, \texttt{ClaimAmount}, we focus on a potential protected variable, \texttt{Female}, indicating if the policyholder is female. Other variables relevant to claims severity for these data are \texttt{VehValue}, the vehicle value in thousand of Australian dollars, and \texttt{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 \texttt{Female} is an important predictor of claim amount.

This model could be readily used for predicting claims severity. For illustrative pur-
Table 1: Gamma Regression Model 1 Summary

|                      | 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    |
| DrivAge old people   | -0.411   | 0.104      | -3.946  | 0.000    |
| DrivAge older work. people | -0.292 | 0.093      | -3.134  | 0.002    |
| DrivAge oldest people | -0.353   | 0.119      | -2.967  | 0.003    |
| DrivAge working people | -0.293   | 0.093      | -3.144  | 0.002    |
| DrivAge young people  | -0.199   | 0.096      | -2.073  | 0.038    |
| Female               | -0.179   | 0.052      | -3.450  | 0.001    |

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](image)

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
Table 2: Gamma Regression Model Summary

<table>
<thead>
<tr>
<th>Predictor</th>
<th>M.1 Coef</th>
<th>M.1 t</th>
<th>M.2 Coef</th>
<th>M.2 t</th>
<th>M.3 Coef</th>
<th>M.3 t</th>
<th>M.4 Coef</th>
<th>M.4 t</th>
<th>M.5 Coef</th>
<th>M.5 t</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>7.98</td>
<td>85.58</td>
<td>7.88</td>
<td>89.45</td>
<td>7.61</td>
<td>156.37</td>
<td>8.16</td>
<td>50.19</td>
<td>7.89</td>
<td>54.92</td>
</tr>
<tr>
<td>VehValue</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>DrivAge.old people</td>
<td>0.41</td>
<td>3.95</td>
<td>0.42</td>
<td>4.01</td>
<td>0.43</td>
<td>4.06</td>
<td>0.45</td>
<td>4.22</td>
<td>0.45</td>
<td>4.26</td>
</tr>
<tr>
<td>DrivAge.older work people</td>
<td>-0.29</td>
<td>-3.13</td>
<td>-0.31</td>
<td>-3.24</td>
<td>-0.30</td>
<td>-3.19</td>
<td>-0.30</td>
<td>-3.18</td>
<td>-0.30</td>
<td>-3.14</td>
</tr>
<tr>
<td>DrivAge.oldest people</td>
<td>-0.35</td>
<td>-2.97</td>
<td>-0.34</td>
<td>-2.85</td>
<td>-0.35</td>
<td>-2.93</td>
<td>-0.38</td>
<td>-3.13</td>
<td>-0.39</td>
<td>-3.21</td>
</tr>
<tr>
<td>DrivAge.working people</td>
<td>-0.29</td>
<td>-3.14</td>
<td>-0.32</td>
<td>-3.39</td>
<td>-0.31</td>
<td>-3.27</td>
<td>-0.30</td>
<td>-3.24</td>
<td>-0.29</td>
<td>-3.11</td>
</tr>
<tr>
<td>DrivAge.young people</td>
<td>-0.20</td>
<td>-2.07</td>
<td>-0.21</td>
<td>-2.20</td>
<td>-0.21</td>
<td>-2.16</td>
<td>-0.22</td>
<td>-2.25</td>
<td>-0.21</td>
<td>-2.22</td>
</tr>
<tr>
<td>Female</td>
<td>-0.18</td>
<td>-3.45</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>-0.42</td>
<td>-2.08</td>
<td>-0.43</td>
<td>-2.12</td>
</tr>
<tr>
<td>AIC</td>
<td>79365.63</td>
<td>NA</td>
<td>79391.08</td>
<td>NA</td>
<td>79390.49</td>
<td>NA</td>
<td>79382.40</td>
<td>NA</td>
<td>79381.38</td>
<td>NA</td>
</tr>
</tbody>
</table>

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

Electronic copy available at: https://ssrn.com/abstract=3592475
Table 3: Comparison of Means by Predictors and Gender

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
<th>Model 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>2215.56</td>
<td>2011.80</td>
<td>2013.42</td>
<td>2045.96</td>
<td>2050.74</td>
<td>2007.63</td>
</tr>
<tr>
<td>Female</td>
<td>1863.01</td>
<td>2015.06</td>
<td>2013.85</td>
<td>1989.57</td>
<td>1986.00</td>
<td>2018.17</td>
</tr>
</tbody>
</table>

not ensure equal values across the protected groups (two genders) as shown Table 3.

![Boxplots of Fitted Claim Amounts by Model and Gender](image_url)

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 Zliobaite (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 non-protected 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.
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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Fei Huang  University of New South Wales

Date of this Draft: March 16, 2021

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

Electronic copy available at: https://ssrn.com/abstract=3592475
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 dis-
 crimination 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 worsen (although they may allow companies to reduce rates if 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 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).

#### 1.5.1 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

---

1. An 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 exceptions. 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.

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 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).
Table 1: Logistic Regression Model of Being Female Summary

|                              | 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’      | 0.950    | 0.122      | 7.820   | 0.000   |
| ‘VehBody.working people’     | 0.224    | 0.077      | 2.911   | 0.004   |
| VehBody.Minibus              | 1.601    | 0.339      | 4.721   | 0.000   |
| ‘VehBody.oldest people’      | -0.478   | 0.117      | -4.098  | 0.000   |
| VehBody.Hardtop              | 0.794    | 0.205      | 3.876   | 0.000   |
| VehBody.Coupe                | 0.863    | 0.266      | 3.250   | 0.001   |
| ‘VehAge.oldest cars’         | -0.466   | 0.102      | -4.559  | 0.000   |
| VehValue                     | -0.155   | 0.041      | -3.770  | 0.000   |
| ‘DrivAge.old people’         | -0.213   | 0.094      | -2.259  | 0.024   |
| ‘VehAge.old cars’            | -0.186   | 0.082      | -2.262  | 0.024   |
| VehBodyConvertible          | 2.240    | 1.268      | 1.767   | 0.077   |

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.

FemLogit1Sum <- summary(FemLogit1)
kable_styling(knitr::kable(coefficients(FemLogit1Sum),digits=3,
caption="Logistic Regression Model of Being Female Summary",
vlime = "", linesep = c("", "", "\addlinespace"), align = "rrrr"), font_size=10)

plot(density(FemLogit1$fitted.values), xlab = "Fitted Probability",
main = "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 rea-
    sonably 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

<table>
<thead>
<tr>
<th>Time</th>
<th>Regulation</th>
</tr>
</thead>
</table>
| 2001/10  | 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 vehicle (type, age, etc.) and driver (age, gender, driving age, etc.) for pricing purposes. |
| 2003     | New pricing regulation for the whole country to give the pricing rights to insurers |
| 2006/3   | To stop the market chaos, the pricing was again regulated. No more than 30% discount |
          | of the benchmark pure risk premium can be applied.                                 |
| 2015-    | The CIRC 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

```r
#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

```r
AmtGamma1 = glm(ClaimAmount ~ VehValue+DrivAge+Female
, family=Gamma(link=log), data= ClaimsData)
sum.AmtGamma1 <- summary(AmtGamma1)
kable_styling(knitr::kable(coefficients(sum.AmtGamma1),digits=3,
caption="Gamma Regression Model 1 Summary",align = "ccccccc|"),
font_size=10)
```

Plot Distribution of Fits

```r
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

```r
#Proxy For Female
#install.packages("dummies")
library("dummies")
ClaimsData1 <- subset(ClaimsData, select =
- c(ClaimOcc, ClaimNb, Gender, Exposure, ClaimAmount))
ClaimsData2<- dummy.data.frame(ClaimsData1, sep = ".")
big.mod = glm(Female ~ .
, family=binomial(link=logit),data= ClaimsData2)
base.mod <- glm(Female ~ 1
, family=binomial(link=logit),data= ClaimsData2)
# perform step-wise algorithm
stepMod <- step(base.mod, scope = list(lower = base.mod, upper = big.mod),
direction = "both", trace = 0, steps = 1000)
shortlistedVars <- names(unlist(stepMod[[1]]))
shortlistedVars <- shortlistedVars[!shortlistedVars %in% "(Intercept)"
]vars <- gsub("\\n","",shortlistedVars)
ClaimsData3<- subset(ClaimsData2, select = c("Female", vars))
FemLogit1 = glm(Female ~ .
, family=binomial(link=logit), data= ClaimsData3)
```

Electronic copy available at: https://ssrn.com/abstract=3592475
## Gamma Regression Summary

```r
RemFem <- function(Var){lm(Var ~ Female, data= ClaimsData)$residual}
VehValueFemale <- RemFem(ClaimsData$VehValue)
DrivAge1Female <- RemFem(1*(ClaimsData$DrivAge=="old people"))
DrivAge2Female <- RemFem(1*(ClaimsData$DrivAge=="older work. people"))
DrivAge3Female <- RemFem(1*(ClaimsData$DrivAge=="oldest people"))
DrivAge4Female <- RemFem(1*(ClaimsData$DrivAge=="working people"))
DrivAge5Female <- RemFem(1*(ClaimsData$DrivAge=="young people"))
DrivAge6Female <- RemFem(1*(ClaimsData$DrivAge=="youngest people"))

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)

temp1A <- cbind(summary(AmtGamma1)$coefficients[,1],
                summary(AmtGamma1)$coefficients[,3])
temp1 <- rbind(temp1A, c(summary(AmtGamma1)$aic, NA))
colnames(temp1) <- c("M.1 Coef", "M.1 t")
rownames(temp1) <- c("(Intercept)",
                     "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])
temp2 <- rbind(temp2A, c(NA, NA))
colnames(temp2) <- c("M.2 Coef", "M.2 t")
temp3A <- cbind(summary(AmtGamma3)$coefficients[,1],
                summary(AmtGamma3)$coefficients[,3])
temp3 <- rbind(temp3A, c(NA, NA))
colnames(temp3) <- c("M.3 Coef", "M.3 t")

temp4A <- cbind(summary(AmtGamma4)$coefficients[,1],
                summary(AmtGamma4)$coefficients[,3])
temp4 <- rbind(temp4A, c(NA, NA))
colnames(temp4) <- c("M.4 Coef", "M.4 t")

temp5A <- cbind(summary(AmtGamma5)$coefficients[,1],
                summary(AmtGamma5)$coefficients[,3])
temp5 <- rbind(temp5A, c(NA, NA))
colnames(temp5) <- c("M.5 Coef", "M.5 t")
temp <- cbind(temp1, temp2, temp3, temp4, temp5)
kable_styling(knitr::kable(temp, digits=2, caption="Gamma Regression Model Summary",
                        align = "cc|cc|cc|cc|cc", latex_options="scale_down"))

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Table by Gender

```
PSFittedF1 <- AmtGamma1$fitted.values*(ClaimsData$Female==1)
PSFittedF2 <- AmtGamma1$fitted.values*(ClaimsData$Female==0)
PSFittedF <- PSFittedF1 + PSFittedF2  # Fitted values if everyone were female

PSFittedM1 <- AmtGamma1$fitted.values*(ClaimsData$Female==0)
PSFittedM2 <- AmtGamma1$fitted.values*(ClaimsData$Female==1)*
            exp(-summary(AmtGamma1)$coefficients["Female",1])
PSFittedM <- PSFittedM1 + PSFittedM2

PSFitted <- (PSFittedF + PSFittedM)/2

Mod1Fits <- AmtGamma1$fitted.values
SumM1Fits <- sum(AmtGamma1$fitted.values)

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

library(Hmisc)
temp1q<-
    summarize(Mod1Fits,ClaimsData$Female, mean)[,2]
temp2q<-
    summarize(Mod2Fits,ClaimsData$Female, mean)[,2]
temp3q<-
    summarize(Mod3Fits,ClaimsData$Female, mean)[,2]
temp4q<-
    summarize(Mod4Fits,ClaimsData$Female, mean)[,2]
temp5q<-
    summarize(Mod5Fits,ClaimsData$Female, mean)[,2]
temp6q<-
    summarize(Mod6Fits,ClaimsData$Female, mean)[,2]
tempq <- cbind(temp1q,temp2q,temp3q,temp4q,temp5q,temp6q)
colnames(tempq) <- c("Model 1","Model 2","Model 3","Model 4","Model 5","Model 6")
rownames(tempq) <- c("Male", "Female")
kable_styling(knitr::kable(tempq,digits=2, caption="Comparison of Means by Predictors and Gender", align = "ccccccc!"), font_size=10)
```

Plot by Gender

```
# Plot the boxplots with the same y range
library(ggplot2)
d=data.frame(d.type=c(rep(1,4624), rep(2, 4624), rep(3, 4624), rep(4,4624),
                      rep(5, 4624), rep(6,4624)), sub.type=rep(ClaimsData$Female,6),
                      val=c(AmtGamma1$fitted.values, AmtGamma2$fitted.values,
                      AmtGamma3$fitted.values, AmtGamma4$fitted.values,
                      AmtGamma5$fitted.values, PSFitted))
p <- ggplot(d, aes(factor(sub.type), val))
p + geom_boxplot(outlier.size=1, outlier.alpha=0.8,
                 outlier.shape=21) + facet_grid(. ~ d.type)+
xlab("Gender (Female=1, Male=0)") + ylab("Fitted Claim Amounts")
```
Annotated Bibliography


———, Kyle D Logue, and Daniel Schwarcz (2014), “Understanding insurance antidiscrimination law,” Southern California Law Review, 87, 195–274 This paper describes fairness and efficiency arguments for introducing insurer prohibitions on underwriting. It uses these arguments to describe U.S. state approaches for nine potentially sensitive characteristics: race, national origin, religion, gender, sexual orientation, age, credit score, zip (postal) code, genetics. This description is for each of five lines of business: auto, disability, health, life, and property/casualty. The paper documents how U.S. state insurance antidiscrimination laws vary a great deal: in substance and in the intensity of regulation, across lines of insurance, across policyholder characteristics, and across states. It also remarks that a surprising number of jurisdictions do not have any laws restricting insurers' ability to discriminate on the basis of race, national origin, or religion, commonly referred to as the "big three" in American law.


Baker, Tom (2002), “Risk, insurance, and the social construction of responsibility,” Embracing Risk: The Changing Culture of Insurance and Responsibility, 33–51 Reaching out to insurance institutions for protection cedes responsibility to them. Risk not only creates responsibility, but also socializes that responsibility. Baker argues that insurance is a form of social responsibility and that insurance institutions shape responsibility in five distinct senses: accountability, trustworthiness, causation, freedom, and solidarity.


Borselli, Angelo (2011), “Insurance rates regulation in comparison with open competition,” Connecticut Insurance Law Journal, 18, 109–68 The main thesis of this paper is to argue for rate deregulation in the U.S. as a superior alternative to the current regulation model. An extensive historical analysis is provided to support this thesis, as well as some empirical facts about the U.S. market, and a comparison of the European experience.
with insurance deregulation. To supplement the analysis, the paper includes a description of rate filing methods being used at the state level.


Cather, David A (2018), “Cream skimming: Innovations in insurance risk classification and adverse selection,” Risk Management and Insurance Review, 21 (2), 335–66 As stated in the title, this paper documents how advances in classification can lead to cream skimming, a type of adverse selection, against insurers that are slow to adopt such pricing innovations. This is done by providing an overview of the switching literature in economics/marketing and by describing two auto insurance case studies, one on the adoption of credit-based insurance scores and one on the introduction of usage-based insurance programs such as telematics.


Frezal, Sylvestre and Laurence Barry (2019), “Fairness in uncertainty: Some limits and misinterpretations of actuarial fairness,” *Journal of Business Ethics*, 1–10. This article provides a historical overview of the concept of actuarial fairness in an insurance context. It distinguishes two viewpoints of actuarial fairness: (1) as a solidarity among a group of insureds pooling their uncertain results and (2) as a fair contract between an insured and an insurance company.


Kleinberg, Jon, Sendhil Mullainathan, and Manish Raghavan (2016), “Inherent trade-offs in the fair determination of risk scores,” arXiv preprint arXiv:1609.05807. This paper formulates 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.

Lehtonen, Turo-Kimmo and Jyri Liukko (2011), “The forms and limits of insurance solidarity,” *Journal of Business Ethics*, 103 (1), 33–44 When taking out an insurance, one participates in a risk pool in which each member is reciprocally responsible for others’ risks; this is insurance solidarity. This paper describes relationships among insurance, solidarity, and welfare. It further seeks to clarify the role of solidarity in both private and social insurance.

Lindholm, Mathias, Ronald Richman, Andreas Tsanakas, and Mario V Wuthrich (2020), “Discrimination-free insurance pricing.” Available at SSRN

This paper considers the same discrimination-free pricing formula as that in Pope and (2011). However, they provide a rigorous probabilistic justification for the pricing procedure. They also justify the pricing framework using casual inference. To overcome the bias caused by the discrimination-free pricing formula, they propose bias correction strategies at the portfolio level. Empirical illustrations using both GLM and neural networks demonstrate how to apply the proposed methods for insurance pricing.


Maysami, Ramin Cooper and W Jean Kwon (1999), “An analysis of islamic takaful insurance.” *Journal of Insurance Regulation*, 18 (1) Takafal means shared responsibility; takaful insurance is a form of insurance that is permitted under Islamic guidelines. This paper describes Islamic socioeconomic principles applied to insurance, including concepts of uncertainty, interest, and investment arrangements. It further describes takaful life insurance, non-life insurance and reinsurance.


Miller, Michael J (2009), “Disparate impact and unfairly discriminatory insurance rates,” in *Casualty Actuarial Society E-Forum, Winter 2009*, 276 In the U.S., "unfairly discriminatory insurance rates" are based on the costs of supplying insurance. This paper emphasizes conflicts that arise between cost-based rate practices and other rating practices that accommodate potential disparate impact effects. To motivate the discussion, it provides historical overviews of (U.S.) rate regulation and standards as well as (U.S.) laws and court decisions regarding disparate impact.


Pope, Devin G and Justin R Sydnor (2011), “Implementing anti-discrimination policies in statistical profiling models,” *American Economic Journal: Economic Policy*, 3 (3), 206–31 This paper proposes an anti-discrimination pricing method, which first estimates the full model to obtain the coefficient estimates, and then averages across the potential protected (SUP) values in the population. This approach can eliminate proxy effects while maintaining predictive accuracy relative to an approach that removing the contentious variables outright.

Prince, Anya and Daniel Schwarcz (2020), “Proxy discrimination in the age of artificial intelligence and big data,” *Iowa Law Review*. Accessed https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3347959. Retrieved on Dec 21, 2019. As learning algorithms become smarter and big data gets bigger, proxy discrimination represents an increasing challenge to anti-discrimination regimes. This paper describes how these advances can undermine these regime outcomes that include (1) promoting social risk-sharing, (2) preventing the chilling of socially-valuable behavior, (3) limiting the effects of past discrimination, and (4) protecting non-conforming members of groups from being saddled with their group’s characteristics.


Schmeiser, Hato, Tina Störmér, and Joël Wagner (2014), “Unisex insurance pricing: Consumers’ perception and market implications,” *The Geneva Papers*, 39, 322–350. Motivated by the European Court of Justice 2011 ruling that forbade sex discrimination in insurance, this paper reports on a survey conducted of customers concerning several price differentiation criteria, including sex. The survey asked about four key insurance products, motor, annuity, life and health, and spanned customers in five European Union countries, the United Kingdom, Germany, France, Italy, and Switzerland. The study showed that consumers accepted differentiation by price criteria, although there were substantial differences by line of business and by country.


INTRODUCTION

Nyce [1] provides an excellent introduction to government insurance including the five main reasons for government insurance, which are summarized in this study note.

Both the federal and state governments are involved in insurance as regulators of insurance companies and as insurers. As insurers, they participate in a number of insurance programs either as the sole insurer, in partnership with insurance companies or in competition with insurance companies. Several major programs that are discussed elsewhere in the syllabus include the National Flood Insurance Program, Social Security, Guaranty Funds, FAIR plans, TRIA, and various state Auto Plans. In this study note, we will discuss state and federal involvement in Workers Compensation Insurance, Crop Insurance, and Unemployment Insurance.

Is government participation in insurance necessary? According to Greene and Weining, there are several reasons for government participation in insurance:

- Filling insurance needs unmet by private insurance
- Compulsory purchase of insurance
- Convenience
- Greater efficiency
- Social purposes

Filling Insurance Needs Unmet by Private Insurance

According to Nyce [1] and Greene [2], one justification for government participation in insurance is the residual market philosophy, with governments offering insurance in markets unserved by private insurance; either because of unavailability or affordability. One implication of the residual market philosophy is that government requirements for insurability are different from private insurers’ requirements. A government may step into situations in which private insurers do not because the government has the financial capacity to subsidize losses, either by directly taxing taxpayers for the insurance program even those who do not benefit from the program, or indirectly by charging less than the actuarial cost of providing insurance coverage for the exposure and making up the difference through government-provided funds (crop / flood). There are strong
arguments, both pro and con, as to whether a government should provide this type of subsidy.

Begun in 1968, the Federal Crime Insurance Program was intended to provide coverage for homeowners and small businesses located in neighborhoods with high crime rates, primarily because private insurance for burglary or robbery was not available at affordable rates for these risks. With proper loss prevention methods, this insurance was available from the private market at rates less than the government rates and the Federal Crime Insurance Program expired in 1995.

Crop insurance and Flood insurance are available and affordable only because of subsidies from the federal government.

*Compulsory Purchase of Insurance*

Government may require individuals or businesses to obtain insurance to meet social responsibilities. A driver who causes an automobile accident is responsible for repairing the damage or injury caused by the accident. Many people would not have the financial resources to meet this obligation without insurance protection. An employer is deemed responsible for injury to an employee regardless of fault. Again, without insurance protection an employer may not be able to meet this obligation. Without a compulsory insurance requirement, some persons who have suffered injury or loss may not have the costs of repairing the damage to their property or their medical costs covered by the person responsible for these costs.

Since purchase of insurance such as workers compensation or automobile insurance may be compulsory, some state legislatures felt obliged to offer the insurance to individuals who could not find a private market [2]. The workers compensation state funds established in several states and the Maryland Automobile Insurance Fund are examples of this philosophy. Another reason why some federal and state legislators believe that government should provide compulsory insurance is that private companies should make only limited profits, given the government guaranteed market. A government program would operate as a not-for-profit entity and the cost of the compulsory insurance would be lower than if offered by a for-profit insurer. In other non-insurance government mandated programs such as highway construction contracts, private organizations often service the program. Within a purely competitive market excessive profits cannot persist in the long run. Private insurance seems to work for most states in supplying the vast majority of the public with compulsory insurance such as workers compensation and auto insurance.

While workers compensation insurance is administered by a monopolistic state fund in a few states, most states have private companies that offer workers compensation insurance, sometimes in competition with state-run funds that will provide coverage to anyone who applies for coverage to the fund, sometimes referred to as “take all comers.” For those states without a state fund, and some with a state fund, there is usually some
other form of residual market that provides coverage to those who are unable to find the required coverage with a private insurer.

For compulsory auto insurance, government insurance is normally not the answer; so provisions are in place to make auto insurance available for those unable to buy insurance on the open market. Sometimes these alternate sources also provide the coverage at costs below the actuarial cost of providing the coverage. In these situations, insurers, other insureds or taxpayers subsidize part of the cost of the coverage for high risk drivers. Hamilton and Ferguson [3] discuss these provisions, which include assigned risk plans, reinsurance facilities, and joint underwriting associations depending on the state. Maryland has the only state-owned auto insurance company.

Convenience

Some government insurance programs are established because it appears to be easier for the government to set up a program quickly as a legislature can appropriate funding for the new program, whereas the private market may take longer to find the necessary funding [3]. A government program may also be already set up to provide certain types of services needed by the insurance program. These services include loss mitigation development and funding, as the Florida legislature did when establishing the Florida Hurricane Catastrophe Fund.

Using government insurance programs only for convenience may not be justified if the private market is willing and able to provide a reasonable market.

Greater Efficiency

One argument in favor of government insurance is that there is greater efficiency than in the private market [2]. Some government insurance programs may be established because of the belief that government can provide the service at a lower cost than the private market. However, the costs of providing insurance, including the costs of keeping records, providing consumer education, issuing policies and paying claims, exist even in government insurance programs. Services such as explaining coverages, keeping records, and handling claims questions are still provided by customer service representatives (who must be compensated). The cost savings claimed for government insurance programs might be overstated because other government departments may perform services on behalf of the government insurance entity that are usually performed by insurance companies, including appraising property, administering claims, or making investments.

Social Purposes

The use of government insurance to achieve social purposes may be the main reason for government insurance programs [3]. Some feel that these social purposes can only be fully achieved within government-owned insurance programs. For example, rehabilitation and vocational training of injured workers are important goals of a workers compensation
system and requirements for loss mitigation in catastrophe insurance plans may be more easily accomplished under government insurance programs. Can private insurance programs accomplish the same goals? If Social Security benefits were made available through a welfare program for the truly needy elderly and disabled while pension plans, 401(k)s, life insurance and disability insurance were to be used to fill the needs of others, would adequate protection for retirement and the disabled be available? If building codes and zoning requirements could be altered to prevent construction in flood-prone areas would private insurers be willing to provide flood coverage? In this scenario, government flood insurance would still be needed for existing buildings in the flood zones, but the need for government flood insurance on new construction would be reduced.

Level of Government

The government (either state or federal) can be involved in three levels as either exclusive insurer, partner with private insurers or as a competitor to private insurers. As an exclusive insurer the government functions as a primary insurer by collecting premiums, providing coverage and paying all claims and expenses. An example of this at the federal level is Social Security and at the state level with some state government-run workers compensation programs.

In partnership with private insurers the government offers reinsurance coverage on specific loss exposures for which the private insurer may retain only a portion of the loss. Examples of this at the federal level are National Flood insurance program, Terrorism Risk Insurance Program and Federal Crop insurance. On the state level this includes several programs to address residual markets where the insured cannot find coverage on the open market. Examples of this are Fair Access to Insurance Requirements (FAIR) plan, Workers Compensation, Windstorm plans and Residual Auto Plans.

In some cases the states operate in direct competition to private insurers such as in the Workers Compensation market in some states.

Detail of the various government insurance plans are provided in this document or in other readings on the Syllabus.

Evaluation of Government Insurance Programs

How well have the federal and state governments performed in providing insurance? According to Greene [2] the questions to be asked are:

- Is the provision of the insurance by the government necessary or does it achieve a social purpose that cannot be provided by private insurance?
- Is it insurance or a social welfare program? Social welfare is designed to provide benefits to qualified people based on demonstrable need for assistance without any payment or contribution by those receiving assistance. These benefits are usually
financed by general tax resources. The public welfare programs are an example of social welfare.

- Is the program efficient, is it accepted by the public?

Based on experience in 2004, 2005 and 2012 how is the Federal Flood Insurance Program performing? The rates don’t seem to be actuarially sound; insurance is usually only purchased if required by law or mortgage companies; people who do not buy flood insurance seem to be getting federal disaster assistance. With appropriate rates, enforceable building codes, up-to-date flood maps, and available reinsurance could private insurance companies provide flood insurance?

In the following sections, we will discuss several government insurance programs, how they work, their origin and purpose, and their effectiveness.

### CROP INSURANCE

To help farmers recover from the Great Depression and the Dust Bowl, in 1938 the federal government created the Federal Crop Insurance Corporation (FCIC), a wholly owned corporation of the U.S. Department of Agriculture (USDA), to oversee the newly created federal crop insurance program. The initial program, intended to provide farmers protection against low yields, was limited to a few major crops (wheat and corn) in the main producing areas [4] and was not successful due to high costs and low participation by farmers [5]. In 1980, Congress passed legislation that expanded the types of crops covered and the regions of the country in which the federal crop insurance was available. To encourage participation the 1980 Federal Crop Insurance Act also authorized a subsidy of the crop insurance premium. According to the Congressional Research Service, in 2014 farmers paid about 38 percent of the policy premium [6].

In the late 1980's and early 1990's, droughts, and wet and cool growing seasons resulted in Congress passing several disaster bills to assist farmers in recovering from these disasters. These disaster bills were still costly and competed with the insurance program, so in 1994, Congress made participation in the crop insurance program mandatory for farmers to be eligible for payments under price support programs, certain loans and other benefits. In addition, catastrophic coverage became available and the premium for this coverage was completely subsidized.

In 1994, the mandatory participation requirement was repealed, but farmers who accepted other types of benefits were required to purchase crop insurance. Participation in the crop insurance program increased significantly.

Multiple Peril Crop Insurance policies are a public-private partnership. Private insurers market and write crop insurance policies, which generally indemnify farmers if yields fall below a given baseline due to natural causes (drought, heat, cold, fire, wind, or flood). Some policies also provide protection if prices fall below a given level. The RMA sets
the rates for these policies and determines which crops can be insured in different parts of the country. The private insurer services the policies including adjusting and settling any claims resulting from the policies. The RMA acts as a reinsurer, reimbursing the participating insurers for losses in return for a portion of the premium. In addition, the federal government reimburses the private insurance companies for their operating and administrative costs. The premiums paid by farmers are subsidized by the federal government to reduce the cost to farmers and encourage farmers to participate in the program.

A farmer must elect to purchase multi-peril coverage prior to planting. The crop insurance subsidies may encourage farmers to purchase more coverage than they might if they paid the full price. A higher participation in the program provides better protection to farmers and may reduce requests for disaster assistance, but it also increases costs to taxpayers.

The Federal crop insurance program differs from most private insurance programs in that an insurer who participates in the Federal program must sell the coverage to any farmer at the rate set by the Federal government. Because the insurer cannot impose its own underwriting standards, judgment or desired rate level regardless of the risk, the risk sharing agreement between the federal government and insurance companies allows an insurer to transfer some liability associated with riskier policies to the government and retain profits or losses on less risky policies.

Some private insurers offer crop-hail insurance which is not part of the federal program. Unlike the multi-peril coverage, a crop-hail policy may be purchased at any time during the growing season. Many farmers purchase this coverage because hail can totally destroy a planted field.

Crop insurance is not mandatory. Farmers may choose whether to buy it, and for which crops. However, the RMA requires that if a farmer chooses to insure a particular field, he or she must insure all of his or her fields growing the same crop in the same county. This alleviates problems of adverse selection, since otherwise farmers would insure only their most loss-prone locations and the program would bear a higher loss ratio. In addition, farmers who choose to forego crop insurance are not eligible for payments for crop loss from federal disaster relief programs.

Supporters of federally backed crop insurance argue that it is necessary to bring stability to a very volatile but important sector of the American economy. Private crop insurance would definitely be more expensive (if the subsidy were removed), and might be substantially more expensive or even unavailable due to the risk of catastrophic losses over a large geographic region. Opponents have charged that crop insurance subsidies encourage agricultural over-production and encourage farming in marginal and disaster-prone areas, which harms the environment and increases general disaster relief costs.
WORKERS COMPENSATION INSURANCE

With the advent of the industrial revolution, new technology and machinery resulted in more industrial accidents. The only recourse an injured worker had was to sue their employer - a long, expensive process with an uncertain outcome. Workers compensation benefits evolved as a means by which employees injured on the job would be certain to have their injuries adequately taken care of by their employer without having to sue. Employers, as well as employees, benefited from the new system as the employer also exchanged an uncertain, potentially large payment, for a certain guaranteed benefit system.

Governments, both state and federal, participate in workers compensation insurance programs in a variety of ways. In some states, workers compensation insurance is only available through private insurance companies, while in other states it is only available from a state fund (an entity established by law to provide workers compensation insurance.) In some states, a state fund may compete with private insurers. In all states, government and private insurers cooperate in providing workers compensation insurance as the benefits are defined by law, either state or federal, and unless there is an exclusive state fund, private insurers provide the insurance coverage.

Workers compensation programs covering most employees are enacted and administered at the state level in all fifty states, the District of Columbia and the five U.S. territories. Federal government employees and certain categories of workers, such as longshoremen or railroad workers, are covered by federal workers compensation programs.

A) Federal Workers Compensation Programs

Various federal programs compensate certain categories of workers for disabilities caused on the job and provide benefits to dependents of workers who die of work-related causes. The federal government works to ensure these programs perform well under the U.S. Office of Management and Budget and Federal Agencies. The following are some major federal programs:

1) The Federal Employee Compensation Act (FECA) provides compensation benefits to non-military, federal employees for disability due to personal injury sustained while in the performance of duty and for employment-related disease. It is administered by the Office of Workers’ Compensation Programs (OWCP) in the U.S. Department of Labor.

The Act is the exclusive remedy for federal civilian employees who suffer occupational injury or illness. There is some claimant overlap with other federal programs; however, regulations generally bar the receipt of dual benefits for the same injury/illness and mandate the reduction in benefits to offset other sources of compensation.

The program’s purpose is to return individuals to work while containing the costs of the system. Designed as a non-adversarial system (i.e., no judicial review and limited
employer ability to contest claims) the program limits administrative and litigation costs, which may account for a substantial share of payout in some systems.

2) The Longshore and Harbor Workers’ Compensation Act of 1927 requires employers to provide workers compensation protection for longshore, harbor, and other maritime workers who are injured or suffer occupational diseases while working on or near navigable water in the United States. These benefits are provided by employers by either procuring insurance coverage from private insurers or by qualifying to self-insure. In some special circumstances, such as second injuries or default in payment of claims by insurers or employers, benefits are paid by a special fund administered by the Department of Labor Employment Standards Administration, Division of Longshore and Harbor Workers’ Compensation (DLHWC). The DLHWC is responsible for adjudicating disputed claims and ensuring that employers and carriers pay benefits.

The Act was created to provide workers’ compensation coverage for categories of workers who were not seamen and were injured while working on or near navigable water in the United States and for which no state act coverage applied. Since the enactment of the Act, there have been questions regarding when coverage under the Act ends and state act coverage begins, particularly when the injury occurs “near” navigable water. In 1984 the scope of the program was amended in an attempt to clarify the extent to which shoreside coverage applied. However, about 40 states allow concurrent receipt of state and longshore benefits. The Act provides for the offset of compensation paid to individuals under any other workers compensation law for the same disability or death. The possibility of an injured worker pursuing either longshore benefits or state act benefits is an issue that employers need to be aware of so that they have adequate insurance protection for their exposure.

3) The Black Lung Benefits Act (BLBA) provides wage-replacement and medical benefits to coal miners who are totally disabled due to pneumoconiosis (black lung disease) and to eligible survivors.

The program was established in 1969 out of concern that black lung victims were not receiving adequate recompense from state workers compensation systems. States have sometimes been slow to recognize chronic occupational diseases such as black lung as compensable injuries. Coal miners frequently change employment, which made it difficult to assign responsibility for a chronic disease to a particular employer. In addition, the BLBA acts as a form of disability insurance, providing compensation to survivors and dependents over and above medical care and loss of earnings. Black lung victims do remain eligible for ordinary workers compensation benefits, but if an individual receives both state and federal benefits, the federal benefit is reduced by the full amount of the state benefit.

Federal benefits are paid by the Black Lung Trust Fund which is financed by coal mine operators through a federal excise tax. In years when payouts exceed revenues, the fund borrows from general government revenue. These deficits are intended to eventually be
paid back with interest. In 2008, however, the Trust Fund deficit had grown so large that Congress made a one-time appropriation to reduce the deficit out of general funds. The hope as of 2016 is that the deficit will eventually be paid down without further excise tax increases or appropriations from general revenue.

B) State Workers Compensation Programs

The state government can act as a partner with private insurers, a competitor of private insurers, or an exclusive insurer.

Partnership with Private Insurers

State programs vary concerning who is allowed to provide insurance, which injuries or illnesses are compensable, and the level of benefits. State laws prescribe workers compensation benefits, but these laws assign to employers the responsibility for providing benefits. Employers can obtain workers compensation coverage to provide benefits to their employees by purchasing insurance from a private carrier or a state workers compensation fund, depending upon the options available in their state. They can also use self-insurance in almost every state if they demonstrate the financial capacity to do so by meeting certain requirements.

Private insurers are allowed to sell workers compensation insurance in all but a few states and territories that have exclusive state funds. Where private insurers may sell workers compensation, a public-private partnership exists since the benefits are established by state law, but insuring those benefits is the role of private insurers.

State Funds

With enactment of state workers compensation laws, the need for workers compensation insurance created its own set of problems, while solving others. Employers feared they would be forced out of business if refused coverage by insurance companies. They were also fearful that insurance carriers might impose excessive premium rates that would be a financial burden. High premium rates could negatively affect a state’s economy and ultimately limit opportunities for employment. Another fear was that because the mandatory nature of the coverage reduces elasticity of demand, insurance rates might soar, enabling insurers to reap unfair profits. Some state legislators addressed these concerns by establishing state workers compensation insurance funds to provide a stable source of affordable insurance coverage.

Washington was the first state to adopt the state fund approach in 1911 and by the end of 1916, thirteen states had established state funds. As of 2016, a total of twenty-three states have state funds that provide workers compensation insurance [7].
In general, state funds are established by an act of the state legislature, have at least part of their board appointed by the governor, are usually exempt from federal taxes, and typically serve as the insurer of last resort – that is, they do not deny insurance coverage to employers who have difficulty purchasing it privately.

Among the twenty-three states that have state workers compensation funds, four have exclusive state funds and nineteen have competitive state funds. The four states with exclusive funds are North Dakota, Ohio, Washington and Wyoming. The South Carolina state fund is a hybrid; it is an exclusive insurer for state employees and is available to cities and counties to insure their employees, but it does not insure private employers.

**Competitive State Funds**

In states with competitive state funds [8], state funds sell workers compensation insurance, at least theoretically, in competition with private insurers in insuring and administrating the workers compensation laws. In some states, Oklahoma is one example, the state fund is not permitted to refuse coverage to an employer, no matter how undesirable the risk, so long as past and current premiums are paid. In this regard they are referred to as “insurers of last resort”. In other states such as Oregon, the state fund does not operate as the insurer of last resort. The mission of the state fund is set out in the Oregon statute that authorizes the existence of the state fund. This mission is to “make insurance available to as many Oregon employers as inexpensively as may be consistent” with protecting the integrity of the Industrial Accident Fund and sound principle of insurance [9].

**Exclusive State Funds**

In states with exclusive state funds, private insurers are not permitted to provide workers compensation insurance and state funds enjoy the exclusive right to sell workers compensation insurance. All employers are required to procure their workers compensation insurance from the state fund, or, in some jurisdictions, an employer may also self-insure.

**Residual Markets**

In states without a state fund, or with a state fund that does not serve as an “insurer of last resort”, it will sometimes happen that an applicant for workers compensation insurance is unable to obtain coverage. Private carriers are limited by regulation in the rates that they can charge. If they believe that the maximum rate will be inadequate for a particular insured, they simply decline to write the policy. This may be because the prospective insured has an inherently hazardous business model, or poor safety practices, or a poor or inadequate loss record.
If states took no action on behalf of such applicants, the applicants would have little choice but to go out of business. This would increase unemployment and impair tax revenues. As a result states without state funds have set up residual market mechanisms to act as insurers of last resort.

The details of this mechanism vary from state to state. Applicants generally enter the residual market after being declined by at least two private carriers. In some states such applicants are assigned to carriers based on their workers compensation market share, with the carriers writing policies and collecting premium and paying claims just as if they were serving the applicants voluntarily.

In other states, carriers reinsure undesirable applicants via a reinsurance pool, and profits or losses from the pool are shared among carriers in proportion to market share. In still other states, the state authorizes a Joint Underwriting Association to serve the residual market, and with carriers sharing on a pro-rata basis profit or loss. Note that these residual market mechanisms closely parallel the automobile liability residual market mechanisms described by Cook [10].

The market share within the residual market varies from state to state and year to year, depending on filed rate adequacy and the risk appetites of insurers. In 2014 the aggregate residual market share was about 8% within the states for which the National Council on Compensation Insurance (NCCI) collects data. The combined ratio for residual market business, over the last several years, has been running between 105% and 115% [11]. As one would expect, residual market business is generally written at a loss despite generally higher rate levels for residual market risks. This results in a higher combined ratio for workers compensation insurers, either directly as residual risks are assigned to carriers, or indirectly as reinsurance or JUA losses are pro-rated. The voluntary market effectively subsidizes the higher-risk residual market, despite higher rate levels for residual market risks.

C) Evaluation of Workers Compensation Insurance

Private carriers remain the largest source of workers compensation benefits. In 2013, they accounted for 56% of benefits paid in the nation, with state funds at 15%, self-insurers at 23%, and the federal government at 6% [12]. The trend in the share of benefits paid by state funds has decreased in recent years, down from 20% in 2004.

Nevertheless, the state funds have created significant competition in the workers compensation insurance business in the states where they operate. State funds have a significant market share in virtually every state where they are located. In 2013, state fund market share (as measured by benefits paid) in competitive state ranged from 7% in Pennsylvania to 59% in Idaho [12].

Proponents of state funds argue that because the state funds are specialists in workers compensation they can be expected to offer more intensive levels of rehabilitation and
other services than some private insurers whose workers compensation plan is only one of several types of coverage offered. However, there are private insurers who also specialize in providing only workers compensation coverage and may offer the same level of service and expertise as the state funds.

State funds are, by law, designed to be self-supporting from their premium and investment revenue. Overhead expense ratios of both exclusive and competitive funds may be lower than expense factors for private carriers in part because of absence of some administrative costs such as agency commissions and other marketing costs. As nonprofit departments of the state, or as independent nonprofit companies, they are able to return dividends or safety refunds to their policyholders, just as some private insurers do. This further reduces the overall cost of workers compensation insurance both for the state fund as well as the private insurer that offers these types of programs [2] [3]. While lower administrative costs for state funds may reduce the cost of providing workers compensation coverage, the fact that more states have not created state funds, and some state funds have been privatized recently, suggests that private insurers are also able to provide this coverage in an efficient manner.

The evidence suggests that both state funds and private insurers are able to provide workers compensation coverage in an efficient manner.

D) Interaction of Workers Compensation Insurance with Medicare

**Background**

In 1965, Congress created the Medicare program to provide health insurance for elderly Americans. The authors of the law creating Medicare recognized that it might overlap with other private or government insurance programs—especially workers compensation insurance.

For example, a 67-year-old worker might be injured in a job accident. That worker would be entitled to have his or her medical costs reimbursed by his or her employer’s workers compensation insurer. However, that worker, being more than 65 years of age, might also be eligible for Medicare. To save Medicare costs, Congress therefore stipulated that workers compensation insurance would be primary in such a case. Medicare would be secondary and would begin to pay only if and when workers compensation benefits were exhausted.

In 1980, Congress passed the Medicare Secondary Payer Act, which stipulated that Medicare was also secondary to liability insurance. For example, if an elderly American were injured by another driver in an auto accident, the responsible driver’s insurance would be primary and Medicare secondary.

The 1980 act also introduced the notion of a “conditional payment”. In many cases persons begin incurring medical costs before eligibility to collect insurance has been
determined. In such cases Medicare will make “conditional payments” to medical providers, subject to later reimbursement by an insurer subsequently determined to be primary.

In some cases workers compensation claims are closed via a settlement which provides compensation to the injured worker for anticipated future medical payments. These payments can also overlap with Medicare. For example, a 63-year-old worker may be injured on the job. That worker is not eligible for Medicare. However, the worker’s claim may be closed with a settlement that allows for medical treatment anticipated to last five years. By the end of that time the worker will be Medicare-eligible.

Federal regulators therefore introduced (1989) the Medicare Set-Aside Allocation (MSA), in which all parties to a settlement would agree to “set aside” a portion of the workers' compensation or liability settlement to be used to pay for future medical costs related to the workers' compensation or liability injury. The MSA funds are primary over Medicare and are limited to services that are related to the injury that would be covered by Medicare after the injured party becomes Medicare eligible.

Despite these laws and regulations, the status of Medicare as secondary insurer remained mostly notional through the Twentieth Century. Medicare administrators simply did not know when Medicare eligible (or soon to be eligible) parties were collecting workers compensation or liability payments. In the absence of aggressive collection, parties had little incentive to agree to MSA’s.

**Medicare Set-Aside Allocations since 2001**

This became increasingly untenable as Medicare costs rose due to medical cost inflation and longer life expectancy. In 2001 the Center for Medicare and Medicaid Services (CMS), which administers Medicare, established its first guidelines for the review and approval of MSA’s. The implied threat was that, where MSA’s were not submitted, or not approved, Medicare would refuse payment for future care, and be more aggressive in seeking reimbursement for past conditional payments.

Since 2001, the submission and approval process for MSAs has changed several times. The changes have generally been in the direction of making MSA approval more difficult. A new sub-industry of MSA consultants has emerged to assist Third Party Administrators and insurers to evaluate settlements for MSA requirements and gain the approval of CMS.

As of 2012, CMS will review all workers compensation MSA’s where:

- The claimant is either a Medicare beneficiary and the settlement is greater than $25,000 or
- The claimant is expected to be Medicare eligible within 30 months of the settlement and the settlement or expected future medical costs and lost wages of the injury exceeds $250,000.
The CMS thresholds do not create a safe-harbor, so even smaller medical settlements should consider Medicare’s interests.

In 2016, the CMS announced that it will also begin reviewing liability and no-fault insurance MSA’s.

After an MSA is approved, the injured worker must comply with reporting requirements and use the MSA appropriately. Claimants must agree to pay their workers compensation-related medical bills, using an interest-bearing account, and to complete reporting of their payments before Medicare will make any 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 non-compliance with the required reporting of claims - $1,000 per day per beneficiary for each day the insurer is out of compliance. This penalty is in addition to a “Double Damages Plus Interest” penalty that defendants (as primary payers) can be fined if Medicare’s right to reimbursement is ignored in any settlement. This rule applies to settlements on or after October 1, 2010.

**Property/Casualty Actuarial Implications of the Recent Changes**

From 2008 through 2010 there may have been an increase in claim closings, lump-sum payments or settlement in advance of the Section 111 reporting deadline. Some RREs may have taken the opportunity to decrease the volume of relatively minor claims that would otherwise need to have the Medicare eligibility status of the claimant determined and reports made to CMS. For actuaries reviewing both insurers’ and self-insurers’ loss data, such claim activity can distort both paid and reported losses.

Slowdowns in claim settlement rates are sometimes attributed by Workers Compensation claims professionals to the CMS changes in procedures and increased emphasis on MSAs. CMS approval of MSAs generally takes 60 to 90 days, which can contribute to a slowdown in settlements. It is possible that some portion of increasing WC medical trends is due to MSAs. In the past, claim settlements may not have specifically identified medical vs. indemnity components and the settlement costs may have been entirely attributed to indemnity. With MSAs, a clear portion of the settlement is identified as medical cost, and the CMS procedures may also have increased the average size of the settlements due to future medical considerations. However, to date there are no publicly available studies to quantify the impact on overall costs or severity trends.

In addition, for some entities, a significant risk factor could be that some injured workers currently receiving Medicare payments should be classified as workers compensation claims. The Section 111 reporting could uncover Medicare payments that should shift to workers compensation claims, causing actuarial estimates to increase as CMS files liens to recover payments. Over the last three years before claim reporting was required, the number of recovery demands from CMS increased significantly to 74,000 in 2010 from 43,000 in 2007 [14]. The number may continue increasing after 2011, or it may spike and then settle down as CMS catches up. Note that recovery can affect claims that were open in prior years, even if they are closed now.
Successful recoveries naturally increase claim severity to an insurer. The General Accounting Office (GAO) estimates total saving due to Medicare claim denials and recovery of payments of $737 million in 2008, rising to $861 million in 2011. These are costs that are borne by insurers instead of Medicare. Furthermore the GAO notes that “(A)n accurate estimate of savings could take years to determine because of the time lag between initial notification of Medicare Secondary Payer situations and recovery, the fact that not all situations result in recoveries, and the fact that mandatory reporting is still being phased in.” [15]

In 2012, new legislation affecting the interaction of Medicare and private property-casualty insurance was passed. A key provision of the Strengthening Medicare and Repaying Taxpayers Act, or SMART Act, was the implementation of a 3-year statute of limitations on Medicare conditional payment recovery. This provision became effective on July 10, 2013 and provides that an action by the federal government for recovery must be filed no later than 3 years after the date of the receipt of notice of a settlement, judgment, award, or other payment.

While the statute does not define how notice of the settlement, judgment, award or other payment is to be made to Medicare, the provision was put in place with the understanding that notice would be through Section 111 Mandatory Insurer Reporting. It is unclear then whether other types of “non-Section 111 Mandatory insurer Reporting” to Medicare will trigger the limitations period, or whether the statute of limitations will be effective in curtailing increased workers compensation claims should Medicare not cover certain claims.

**Changes in the Future?**

Section 111 reporting is in its infancy. It is uncertain how CMS will use the huge volume of data that it is collecting, whether this will lead to a significant further increase in set-asides or recovery demands, and whether the statute of limitations will temper claim volume. It may take years for changes to be fully apparent, especially for liability lines for which mandatory reporting didn’t begin until 2012 and will be phased in.
Notes:


Reinsurance contracts held: an example of proportionate reinsurance coverage

IFRS 17 Insurance Contracts
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
Further information
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.
Group of underlying insurance contracts
**Further information**

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.
Further information
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
Further information

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).
### Statement of profit or loss

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1Jan-30Jun</td>
<td>1Jul-31Dec</td>
</tr>
<tr>
<td>Expected claims incurred(^1)</td>
<td>100</td>
<td>200</td>
</tr>
<tr>
<td>Contractual service margin</td>
<td>50(^2)</td>
<td>100</td>
</tr>
<tr>
<td>Insurance revenue</td>
<td>150</td>
<td>300</td>
</tr>
<tr>
<td>Actual claims incurred(^1)</td>
<td>(100)</td>
<td>(200)</td>
</tr>
<tr>
<td>Insurance service expenses</td>
<td>(100)</td>
<td>(200)</td>
</tr>
<tr>
<td>Insurance service result</td>
<td>50</td>
<td>100</td>
</tr>
</tbody>
</table>

**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.
Reinsurance contract held: timing of cash flows match timing of cash flows for the underlying insurance contracts
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.

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.
Further information

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.
## Further information

1. The 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).
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).
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.
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 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.
Reinsurance contract held: cash flows are settled net at the end of the coverage period
### Cash flows

Same fact pattern, expect that all reinsurance contract cash flows are settled net at the end of the coverage period

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 Jan</td>
<td>30 June</td>
<td>31 Dec</td>
</tr>
<tr>
<td>Premiums</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Claims</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Net cash outflow</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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).
Further information

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.
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%. 

<table>
<thead>
<tr>
<th>Reinsurance premiums:</th>
<th>Year 1</th>
<th></th>
<th>Year 2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1Jan-30Jun</td>
<td>1Jul-31Dec</td>
<td>1Jan-30Jun</td>
<td>1Jul-31Dec</td>
</tr>
<tr>
<td>Expected claims recovered</td>
<td>(100)</td>
<td>(200)</td>
<td>(200)</td>
<td>(100)</td>
</tr>
<tr>
<td>Contractual service margin</td>
<td>(50)</td>
<td>(100)</td>
<td>(100)</td>
<td>(50)</td>
</tr>
<tr>
<td>Amounts recovered from reinsurance</td>
<td>100</td>
<td>200</td>
<td>200</td>
<td>100</td>
</tr>
<tr>
<td>Net reinsurance contract expenses</td>
<td>(50)</td>
<td>(100)</td>
<td>(100)</td>
<td>(50)</td>
</tr>
</tbody>
</table>
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.
## Statement of profit or loss

*the whole picture*

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1Jan-30Jun</td>
<td>1Jul-31Dec</td>
</tr>
<tr>
<td>Insurance revenue</td>
<td>150</td>
<td>300</td>
</tr>
<tr>
<td>Insurance service expenses</td>
<td>(100)</td>
<td>(200)</td>
</tr>
<tr>
<td>Net expense from reinsurance contracts</td>
<td>(50)</td>
<td>(100)</td>
</tr>
<tr>
<td>Insurance service result</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**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.

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.

FMA’s are encouraged to adopt a CPD strategy. 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.”

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.”

Differences of views among FMA’s 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.

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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 Professionalism Committee Resources.
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.”

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

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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 interest".  

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 employers, 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."  

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.

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.

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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, equitably.\(^ {14}\)

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

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\(^ {11}\) 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)
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 association\(^2\) 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.

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\(^1\) ‘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 standards\(^3\) 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.

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\(^3\) 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 associations.

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

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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

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.

IAA Insurer Solvency Assessment Working Party

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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 Risk 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
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 as 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.
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**

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 lapse, 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 run-off, 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 practice. 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.

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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.
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

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.

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.

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

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

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 inter-company 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.

![Diagram of Insurer Risks and Operations](image-url)
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 into 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 1 or 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.

<table>
<thead>
<tr>
<th>Insurer Market &amp; credit risks (IR=Interest Rate risk; FX=Foreign Exchange risk)</th>
<th>Invested assets</th>
<th>Insurance contract liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fixed income</td>
<td>Equity</td>
</tr>
<tr>
<td>Market risk</td>
<td>Change in value due to economic factors</td>
<td>IR + FX markets</td>
</tr>
<tr>
<td>Credit risk</td>
<td>Change in value due to default or expected default</td>
<td>Default, loss of low-grade bonds</td>
</tr>
</tbody>
</table>

Dependencies should be considered. Example: dependency between market shocks and credit risk.

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 multi-pillar 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 experience-based explicit 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 problems. 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 management:
- 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.

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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

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• 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 pay-out 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 95\textsuperscript{th} 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 95\textsuperscript{th} 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 95\textsuperscript{th} 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.

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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

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

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.

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

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 company-
specific 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 $\mu$ represents the mean or expected loss
outcome and $\sigma$ 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 $\mu$ 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 $\mu$) should be recognized as “hidden” capital since it partly protects the company against adverse outcomes. Under the second approach, the observed $\mu, \sigma$ 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-of-business (LOB) level in the company. Under the first approach, if the LOB’s are labelled using subscripts, then the total balance sheet requirement $c_j$ for $\text{LOB}_j$ can be rewritten as $c_j = \mu_j + k_j \sigma_j$. Note that all three elements are specific to $\text{LOB}_j$. The factor $k_j$ can then be made specific to $\text{LOB}_j$.

6.16 The capital requirement for $\text{LOB}_j$ 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. $\mu_j$ representing the expected losses an “exposure” measure unique to the company and must be calculated by the company;
2. $k_j$ 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 could be set to 1 in order to have some additional conservatism. Similarly if the 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 \( \mu_i \) and \( \sigma_i \) can be used to calculate the mean, \( \mu \), and standard deviation, \( \sigma \), of the amount of funds for the entire insurance company with the following formulas.

\[
\mu = \sum_j \mu_j
\]

\[
\sigma = \sqrt{\sum_j \sigma_j^2 + \sum_{i \neq j} \rho_{i,j} \sigma_i \sigma_j}
\]

\( \mu \) and \( \sigma \) 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 $\sigma$ and the skewness $\gamma$ of the distribution can be found in the following way:

$$
\sigma = \sqrt{\sum_i q_i X_i^2}
$$

$$
\gamma = \sum_i \frac{q_i X_i^3}{\sigma^3}
$$

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:

$$
c_{\text{volatility}} = \sigma(2.58 + 0.94\gamma)
$$

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:

$$
c_{\text{volatility}} = \left(\frac{77.4}{\sqrt{#}} + \frac{942.7}{#}\right)\mu
$$

Volatility example

6.32 Three portfolios are used to test these methods. The three portfolios have each their own characteristics.

<table>
<thead>
<tr>
<th>Portfolio</th>
<th>Number insured(#)</th>
<th>Max insured/ average</th>
<th>Skewness</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>125,970</td>
<td>11.6</td>
<td>0.13</td>
</tr>
<tr>
<td>2</td>
<td>60,777</td>
<td>40.3</td>
<td>0.77</td>
</tr>
<tr>
<td>3</td>
<td>24,570</td>
<td>14.7</td>
<td>0.38</td>
</tr>
</tbody>
</table>

6.33 The results for the volatility capital are (% Risk Premium):

<table>
<thead>
<tr>
<th>Portfolio</th>
<th>Simulation</th>
<th>Normal Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>22.7%</td>
<td>22.8%</td>
</tr>
<tr>
<td>2</td>
<td>69.9%</td>
<td>68.1%</td>
</tr>
<tr>
<td>3</td>
<td>57.2%</td>
<td>57.4%</td>
</tr>
</tbody>
</table>
6.34 Assuming that reinsurance caps the individual sum at risk at 1,000,000 the volatility gives the following results:

<table>
<thead>
<tr>
<th>Portfolio</th>
<th>Simulation</th>
<th>Normal Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>22.9%</td>
<td>22.8%</td>
</tr>
<tr>
<td>2</td>
<td>37.9%</td>
<td>37.6%</td>
</tr>
<tr>
<td>3</td>
<td>56.6%</td>
<td>55.8%</td>
</tr>
</tbody>
</table>

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:

\[
\left( \frac{-77.4}{\sqrt{314721}} + \frac{942.7}{314721} \right) = 0.14
\]
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.

The effect of 10% higher mortality rates on single premium business is given by:

<table>
<thead>
<tr>
<th>Duration/Interest</th>
<th>Endowment</th>
<th>Pure endowment</th>
<th>Term</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4%</td>
<td>8%</td>
<td>4%</td>
</tr>
<tr>
<td>5</td>
<td>0.07%</td>
<td>0.14%</td>
<td>0.73%</td>
</tr>
<tr>
<td>10</td>
<td>0.19%</td>
<td>0.41%</td>
<td>1.14%</td>
</tr>
<tr>
<td>20</td>
<td>0.44%</td>
<td>1.00%</td>
<td>1.54%</td>
</tr>
</tbody>
</table>

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 $\alpha$ and $\beta$ times the product duration $n$. Some sample values of $\alpha$ and $\beta$ are also given in the table below.

$$c_{\text{trend}} = \min\{\alpha, \beta n\}(\text{liability})$$

<table>
<thead>
<tr>
<th></th>
<th>$\alpha$</th>
<th>$\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pure endowment</td>
<td>7%</td>
<td>0.35%</td>
</tr>
<tr>
<td>Endowment</td>
<td>3%</td>
<td>0.15%</td>
</tr>
<tr>
<td>Term</td>
<td>30%</td>
<td>1.50%</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Expenses</th>
<th>Fixed</th>
<th>Variable</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquisition</td>
<td>#</td>
<td>#</td>
<td>Total Acquisition</td>
</tr>
<tr>
<td>Maintenance</td>
<td>#</td>
<td>#</td>
<td>Total Maintenance</td>
</tr>
<tr>
<td></td>
<td>Total Fixed</td>
<td>Total Variable</td>
<td>Total Expenses</td>
</tr>
</tbody>
</table>

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 \( \text{Factor} \times \text{Fixed Acquisition Expenses} \). 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 \( \text{Factor} \times \text{Fixed Maintenance Expenses} \) 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.

**Illustration of Simple Non-Life Insurer**

<table>
<thead>
<tr>
<th>Line of Business</th>
<th>Liability Type</th>
<th>Expected Loss ($M)</th>
<th>CoV</th>
<th>Confidence Factor</th>
<th>Size Factor</th>
<th>Capital Required ($M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor Car</td>
<td>Unexpired Risks</td>
<td>750.00</td>
<td>15.00%</td>
<td>2.50</td>
<td>1.0</td>
<td>1,031.25</td>
</tr>
<tr>
<td>Motor Car</td>
<td>Outstanding Claims</td>
<td>250.00</td>
<td>10.00%</td>
<td>2.50</td>
<td>1.0</td>
<td>312.50</td>
</tr>
<tr>
<td>Home</td>
<td>Unexpired Risks</td>
<td>500.00</td>
<td>18.00%</td>
<td>2.50</td>
<td>1.0</td>
<td>725.00</td>
</tr>
<tr>
<td>Home</td>
<td>Outstanding Claims</td>
<td>125.00</td>
<td>12.00%</td>
<td>2.50</td>
<td>1.0</td>
<td>162.50</td>
</tr>
<tr>
<td>Workers Compensation</td>
<td>Unexpired Risks</td>
<td>1,250.00</td>
<td>35.00%</td>
<td>2.50</td>
<td>1.0</td>
<td>2,343.75</td>
</tr>
<tr>
<td>Workers Compensation</td>
<td>Outstanding Claims</td>
<td>3,750.00</td>
<td>25.00%</td>
<td>2.50</td>
<td>1.0</td>
<td>6,093.75</td>
</tr>
<tr>
<td>Public Liability</td>
<td>Unexpired Risks</td>
<td>200.00</td>
<td>30.00%</td>
<td>2.50</td>
<td>1.0</td>
<td>350.00</td>
</tr>
<tr>
<td>Public Liability</td>
<td>Outstanding Claims</td>
<td>600.00</td>
<td>20.00%</td>
<td>2.50</td>
<td>1.0</td>
<td>900.00</td>
</tr>
<tr>
<td>Sub-Totals (before)</td>
<td>Unexpired Risks</td>
<td>2,700.00</td>
<td></td>
<td></td>
<td></td>
<td>4,450.00</td>
</tr>
<tr>
<td>Diversification</td>
<td>Outstanding Claims</td>
<td>4,725.00</td>
<td></td>
<td></td>
<td></td>
<td>7,468.75</td>
</tr>
<tr>
<td>All Classes</td>
<td></td>
<td>7,425.00</td>
<td></td>
<td></td>
<td></td>
<td>11,918.75</td>
</tr>
<tr>
<td><strong>Diversification Allowance</strong></td>
<td>All Classes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-2,024.60</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>9,894.15</strong></td>
</tr>
</tbody>
</table>

**Correlation Coefficients**

<table>
<thead>
<tr>
<th></th>
<th>Motor Car</th>
<th>Home</th>
<th>Workers Comp.</th>
<th>Public Liability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor Car</td>
<td>100.0%</td>
<td>50.0%</td>
<td>25.0%</td>
<td>25.0%</td>
</tr>
<tr>
<td>Home</td>
<td>50.0%</td>
<td>100.0%</td>
<td>25.0%</td>
<td>25.0%</td>
</tr>
<tr>
<td>Workers Compensation</td>
<td>25.0%</td>
<td>25.0%</td>
<td>100.0%</td>
<td>50.0%</td>
</tr>
<tr>
<td>Public Liability</td>
<td>25.0%</td>
<td>25.0%</td>
<td>50.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>
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.

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.

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.

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.

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.

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.

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.

### Underwriting Risk – Disability Income

The following paragraphs provide an illustration of the determination of standardized capital requirements for disability income products.

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 their 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.
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.

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.

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.

Market Risk

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.

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.
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.

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).

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.

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.

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.

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.

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.

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.

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

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

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

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:

- 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:

- Conditions for use of a model are given in:

- The Australian capital requirement in respect of general (non-life) insurance companies permits the use of internal models. This is described in the paper:
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 reasons 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 reinsurance 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.

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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.

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 of 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:

\[
\text{Max} \left( 0 ; \text{Min} (X-P; L) \right)
\]
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**

![Effect of Excess of Loss Reinsurance on Loss Distribution](image)

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.
8.16 The probability distribution in the above graph shows how the 99\textsuperscript{th} 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 limit\(^5\).

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 failure\(^6\).

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 on 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.

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\(^5\) 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

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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 appropriate. This said, the proper evaluation of the risk reducing impact of non-proportional reinsurance contracts

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7 Refer to the case study for non-life insurance for a general approach to practically apply such a routine.
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 on the ability to reliably come up with a risk profile 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 $\theta$ (say, $\theta = 70\%$) can be applied to the full amount of capital relief derived from having a reinsurance arrangement in place. The factor $\theta$ 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, $\theta$, should be in line with the charge for bond defaults with similar default frequencies
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 $\rho$):

$$\rho(X) - (1-\theta) \rho(X_{\text{cede}}) = \rho(X_{\text{net}}) + \theta \rho(X_{\text{cede}}).$$

Where $\rho$ denotes the risk measure applied (eg. Tail Value at Risk) and $X$ denotes the aggregate loss.
9. Total Company Requirement

9.1 Concentration

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

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

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 and that 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 quantitier 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.

The chart below summarizes some of the key features of this company.

<table>
<thead>
<tr>
<th>Product Code</th>
<th>Type of Product</th>
<th>Number of Lives</th>
<th>Sum Assured or monthly payment</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALC 1001</td>
<td>Term to 100 insurance</td>
<td>56,971</td>
<td>3.6 Billion</td>
</tr>
<tr>
<td>ALC 1002</td>
<td>Non-par Whole Life</td>
<td>5,000</td>
<td>0.9 Billion</td>
</tr>
<tr>
<td>ALC 1003</td>
<td>Term to 100 insurance</td>
<td>94,560</td>
<td>9.0 Billion</td>
</tr>
<tr>
<td>ALC 1004</td>
<td>1 year renewable Term</td>
<td>7,463</td>
<td>1.4 Billion</td>
</tr>
<tr>
<td>ALC 1005</td>
<td>5 year renewable term</td>
<td>3,450</td>
<td>0.5 Billion</td>
</tr>
<tr>
<td>ALC 1007</td>
<td>Payout Annuities</td>
<td>250</td>
<td>1.5 million / month</td>
</tr>
</tbody>
</table>

2.4 On a Canadian GAAP basis, the balance sheet of the Company at December 31, 2002 can be summarized in the following table:
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”.

<table>
<thead>
<tr>
<th></th>
<th>Insurance</th>
<th>Annuity</th>
<th>Total</th>
<th>Surplus</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash and short term</td>
<td>89,304</td>
<td>21,347</td>
<td>110,651</td>
<td>19,116</td>
<td>129,767</td>
</tr>
<tr>
<td>Government Bonds</td>
<td>374,230</td>
<td>44,418</td>
<td>418,648</td>
<td>242,541</td>
<td>661,189</td>
</tr>
<tr>
<td>Corp Bonds</td>
<td>AAA</td>
<td>71,316</td>
<td>32,506</td>
<td>103,822</td>
<td>32,101</td>
</tr>
<tr>
<td></td>
<td>AA</td>
<td>195,627</td>
<td>62,306</td>
<td>257,933</td>
<td>74,609</td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>101,963</td>
<td>57,284</td>
<td>159,247</td>
<td>46,460</td>
</tr>
<tr>
<td></td>
<td>BBB</td>
<td>61,559</td>
<td>30,231</td>
<td>91,790</td>
<td>19,844</td>
</tr>
<tr>
<td>Total Assets</td>
<td>893,999</td>
<td>248,092</td>
<td>1,142,091</td>
<td>434,671</td>
<td>1,576,762</td>
</tr>
<tr>
<td>Liabilities</td>
<td>Actuarial</td>
<td>887000</td>
<td>249000</td>
<td>1136000</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>24000</td>
<td>2600</td>
<td>26600</td>
<td>5750</td>
</tr>
<tr>
<td></td>
<td></td>
<td>911,000</td>
<td>251,600</td>
<td>1,162,600</td>
<td>5,750</td>
</tr>
<tr>
<td>Surplus</td>
<td>Common Shares</td>
<td>250,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Retained</td>
<td>158,412</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>408,412</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Liabilities plus surplus</td>
<td>1,576,762</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Total Solvency Provisions at December 31, 2002

<table>
<thead>
<tr>
<th></th>
<th>Systematic Insurance Risks</th>
<th>Non-systematic Insurance Risks</th>
<th>Market Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mortality Level</td>
<td>Mortality Trend</td>
<td>Lapse Level</td>
</tr>
<tr>
<td>ALC 1001</td>
<td>43.1</td>
<td>50.1</td>
<td>28.9</td>
</tr>
<tr>
<td>ALC 1002</td>
<td>43.8</td>
<td>17.4</td>
<td>7.1</td>
</tr>
<tr>
<td>ALC 1003</td>
<td>105.7</td>
<td>163.6</td>
<td>103.3</td>
</tr>
<tr>
<td>ALC 1004</td>
<td>53.1</td>
<td>37.6</td>
<td>39.9</td>
</tr>
<tr>
<td>ALC 1005</td>
<td>8.6</td>
<td>5.8</td>
<td>3.9</td>
</tr>
<tr>
<td>Total Ins</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ALC 1007</td>
<td>16.8</td>
<td>8.7</td>
<td>-</td>
</tr>
<tr>
<td>Surplus</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>TOTAL</td>
<td>178.8</td>
<td>265.8</td>
<td>152.8</td>
</tr>
</tbody>
</table>

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

\[ EC_r = \sum \sum EC_i \times EC_j \times \rho_{ij} \]

3.7 Where \( \rho_{ij} \) 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.

<table>
<thead>
<tr>
<th>Risk</th>
<th>Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mortality level uncertainty</td>
<td>25%</td>
</tr>
<tr>
<td>Mortality trend uncertainty</td>
<td>100%</td>
</tr>
<tr>
<td>Mortality volatility</td>
<td>25%</td>
</tr>
<tr>
<td>Mortality catastrophe</td>
<td>100%</td>
</tr>
<tr>
<td>Lapse level uncertainty</td>
<td>50%</td>
</tr>
<tr>
<td>Lapse volatility</td>
<td>50%</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>Risk Correlations</th>
<th>Mortality Level</th>
<th>Mortality Trend</th>
<th>Lapse Level</th>
<th>Mortality Volatility</th>
<th>Mortality Catastrophe</th>
<th>Lapse Volatility</th>
<th>Mismatch</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mortality level</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>.25</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mortality trend</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Lapse level</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>.25</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mortality volatility</td>
<td>.25</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mortality catastrophe</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Lapse volatility</td>
<td>0</td>
<td>0</td>
<td>.25</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mismatch</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Default</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

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 least 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 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 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.

---

### Mortality Assumptions at Various Confidence Levels

<table>
<thead>
<tr>
<th></th>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3,4,5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lives</td>
<td>56,791</td>
<td>5,000</td>
<td>103,000</td>
</tr>
<tr>
<td>μ/σ</td>
<td>.19</td>
<td>.39</td>
<td>.14</td>
</tr>
<tr>
<td>γ</td>
<td>.85</td>
<td>.76</td>
<td>1.35</td>
</tr>
</tbody>
</table>

Percentiles:

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5%</td>
<td>60%</td>
<td>52%</td>
<td>63%</td>
</tr>
<tr>
<td>15%</td>
<td>64%</td>
<td>58%</td>
<td>66%</td>
</tr>
<tr>
<td>25%</td>
<td>66%</td>
<td>63%</td>
<td>67%</td>
</tr>
<tr>
<td>35%</td>
<td>68%</td>
<td>66%</td>
<td>69%</td>
</tr>
<tr>
<td>45%</td>
<td>70%</td>
<td>69%</td>
<td>70%</td>
</tr>
<tr>
<td>50%</td>
<td>70%</td>
<td>71%</td>
<td>70%</td>
</tr>
<tr>
<td>55%</td>
<td>71%</td>
<td>72%</td>
<td>71%</td>
</tr>
<tr>
<td>65%</td>
<td>73%</td>
<td>75%</td>
<td>72%</td>
</tr>
<tr>
<td>75%</td>
<td>74%</td>
<td>79%</td>
<td>73%</td>
</tr>
<tr>
<td>85%</td>
<td>76%</td>
<td>84%</td>
<td>75%</td>
</tr>
<tr>
<td>95%</td>
<td>80%</td>
<td>92%</td>
<td>77%</td>
</tr>
</tbody>
</table>

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 liability at a high confidence level for that particular product and risk. For example, 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.
4.7 The table below shows the results of this process.

**Liabilities at Various Percentiles – Level Uncertainty Risk**

(Millions)

<table>
<thead>
<tr>
<th>Percentile:</th>
<th>ALC 1001</th>
<th>ALC 1002</th>
<th>ALC 1003</th>
<th>ALC 1004</th>
<th>ALC 1005</th>
<th>ALC 1007</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0</td>
<td>124.4</td>
<td>31.2</td>
<td>736.3</td>
<td>(267.1)</td>
<td>(27.8)</td>
<td>271.9</td>
</tr>
<tr>
<td>25.0</td>
<td>144.2</td>
<td>46.8</td>
<td>787.0</td>
<td>(241.6)</td>
<td>(24.0)</td>
<td>267.9</td>
</tr>
<tr>
<td>45.0</td>
<td>154.9</td>
<td>55.8</td>
<td>817.3</td>
<td>(228.4)</td>
<td>(21.9)</td>
<td>266.2</td>
</tr>
<tr>
<td>50.0</td>
<td>157.2</td>
<td>57.7</td>
<td>824.2</td>
<td>(225.8)</td>
<td>(21.4)</td>
<td>263.8</td>
</tr>
<tr>
<td>55.0</td>
<td>159.6</td>
<td>59.8</td>
<td>831.3</td>
<td>(223.0)</td>
<td>(20.9)</td>
<td>261.7</td>
</tr>
<tr>
<td>75.0</td>
<td>170.0</td>
<td>68.9</td>
<td>860.6</td>
<td>(211.1)</td>
<td>(19.0)</td>
<td>255.6</td>
</tr>
<tr>
<td>95.0</td>
<td>185.2</td>
<td>84.9</td>
<td>900.8</td>
<td>(191.5)</td>
<td>(15.8)</td>
<td>252.5</td>
</tr>
<tr>
<td>97.5</td>
<td>189.7</td>
<td>89.9</td>
<td>912.5</td>
<td>(186.1)</td>
<td>(14.8)</td>
<td>251.8</td>
</tr>
<tr>
<td>99.0</td>
<td>195.4</td>
<td>95.7</td>
<td>921.4</td>
<td>(179.2)</td>
<td>(13.7)</td>
<td>251.0</td>
</tr>
<tr>
<td>99.5</td>
<td>198.7</td>
<td>99.8</td>
<td>926.8</td>
<td>(174.9)</td>
<td>(13.2)</td>
<td>248.0</td>
</tr>
<tr>
<td>99.9</td>
<td>204.2</td>
<td>110.5</td>
<td>934.8</td>
<td>(167.1)</td>
<td>(12.1)</td>
<td>243.0</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>σ</td>
<td>18.4</td>
<td>16.3</td>
<td>50.1</td>
<td>22.8</td>
<td>3.7</td>
<td>5.7</td>
</tr>
<tr>
<td>σ/μ</td>
<td>11.8%</td>
<td>28.1%</td>
<td>6.1%</td>
<td>-10.0%</td>
<td>-17.0%</td>
<td>2.3%</td>
</tr>
<tr>
<td>ratio: 99.9 / mean</td>
<td>130%</td>
<td>191%</td>
<td>114%</td>
<td>74%</td>
<td>56%</td>
<td>108%</td>
</tr>
<tr>
<td>CTE(99) - CTE(0)</td>
<td>43.1</td>
<td>43.8</td>
<td>105.7</td>
<td>53.1</td>
<td>8.6</td>
<td>16.8</td>
</tr>
</tbody>
</table>

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.
<table>
<thead>
<tr>
<th>Risk Profile</th>
<th>Assumption-Based</th>
<th>Factor-Based</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% of Best Estimate Mortality</td>
<td>% of Best Estimate Liability</td>
</tr>
<tr>
<td>$\sigma/\mu$</td>
<td>All products</td>
<td>T-100</td>
</tr>
<tr>
<td>.00</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>.05</td>
<td>107%</td>
<td>107%</td>
</tr>
<tr>
<td>.10</td>
<td>114%</td>
<td>113%</td>
</tr>
<tr>
<td>.15</td>
<td>122%</td>
<td>120%</td>
</tr>
<tr>
<td>.20</td>
<td>130%</td>
<td>125%</td>
</tr>
</tbody>
</table>

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.
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.

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.
4.26 The liabilities that result from this work is shown in the following table:

<table>
<thead>
<tr>
<th>Percentile:</th>
<th>ALC1001</th>
<th>ALC1002</th>
<th>ALC1003</th>
<th>ALC1004</th>
<th>ALC1005</th>
<th>ALC1007</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0</td>
<td>123.4</td>
<td>44.9</td>
<td>715.2</td>
<td>(249.4)</td>
<td>(25.2)</td>
<td>257.3</td>
<td>867.2</td>
</tr>
<tr>
<td>25.0</td>
<td>142.8</td>
<td>52.5</td>
<td>779.2</td>
<td>(235.6)</td>
<td>(23.1)</td>
<td>254.1</td>
<td>972.9</td>
</tr>
<tr>
<td>45.0</td>
<td>154.0</td>
<td>56.5</td>
<td>816.5</td>
<td>(227.7)</td>
<td>(21.8)</td>
<td>252.3</td>
<td>1,030.9</td>
</tr>
<tr>
<td>50.0</td>
<td>156.6</td>
<td>57.4</td>
<td>826.1</td>
<td>(225.9)</td>
<td>(21.6)</td>
<td>251.9</td>
<td>1,046.0</td>
</tr>
<tr>
<td>55.0</td>
<td>159.3</td>
<td>58.3</td>
<td>834.9</td>
<td>(224.2)</td>
<td>(21.3)</td>
<td>251.4</td>
<td>1,058.9</td>
</tr>
<tr>
<td>75.0</td>
<td>170.3</td>
<td>62.2</td>
<td>870.5</td>
<td>(216.5)</td>
<td>(20.0)</td>
<td>249.6</td>
<td>1,116.9</td>
</tr>
<tr>
<td>95.0</td>
<td>189.1</td>
<td>68.7</td>
<td>928.9</td>
<td>(202.7)</td>
<td>(17.9)</td>
<td>246.4</td>
<td>1,212.9</td>
</tr>
<tr>
<td>97.5</td>
<td>194.7</td>
<td>70.6</td>
<td>947.4</td>
<td>(198.1)</td>
<td>(17.2)</td>
<td>245.1</td>
<td>1,241.4</td>
</tr>
<tr>
<td>99.0</td>
<td>201.2</td>
<td>72.7</td>
<td>966.3</td>
<td>(193.0)</td>
<td>(16.5)</td>
<td>243.8</td>
<td>1,274.1</td>
</tr>
<tr>
<td>99.5</td>
<td>204.7</td>
<td>74.2</td>
<td>982.2</td>
<td>(189.9)</td>
<td>(16.0)</td>
<td>242.9</td>
<td>1,296.1</td>
</tr>
<tr>
<td>99.9</td>
<td>214.0</td>
<td>76.8</td>
<td>1014.5</td>
<td>(182.2)</td>
<td>(15.0)</td>
<td>241.4</td>
<td>1,339.0</td>
</tr>
<tr>
<td>µ</td>
<td>156.5</td>
<td>57.2</td>
<td>824.1</td>
<td>(226.0)</td>
<td>(21.5)</td>
<td>251.8</td>
<td>1,043.6</td>
</tr>
<tr>
<td>σ/µ</td>
<td>12.7%</td>
<td>12.5%</td>
<td>7.9%</td>
<td>-6.3%</td>
<td>-10.4%</td>
<td>1.3%</td>
<td>10.0%</td>
</tr>
<tr>
<td>ratio: 99.9 / mean</td>
<td>136.8%</td>
<td>134.2%</td>
<td>123.1%</td>
<td>80.6%</td>
<td>69.8%</td>
<td>95.9%</td>
<td>128.3%</td>
</tr>
</tbody>
</table>

CTE99 - CTE0 50.1 17.4 163.6 37.6 5.8 8.7 262.5

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 \( \alpha \) and \( \beta \) times the product duration \( n \). Some sample values of \( \alpha \) and \( \beta \) are also given in the table below.
\[ c_{\text{trend}} = \min\{\alpha, \beta n\}(\text{liability}) \]

<table>
<thead>
<tr>
<th></th>
<th>(\alpha)</th>
<th>(\beta)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pure endowment</td>
<td>7%</td>
<td>0.35%</td>
</tr>
<tr>
<td>Endowment</td>
<td>3%</td>
<td>0.15%</td>
</tr>
<tr>
<td>Term</td>
<td>30%</td>
<td>1.50%</td>
</tr>
</tbody>
</table>

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.
Claims Over 2 Year Horizon – Volatility Risk

<table>
<thead>
<tr>
<th>Percentile</th>
<th>ALC1001</th>
<th>ALC1002</th>
<th>ALC1003</th>
<th>ALC1004</th>
<th>ALC1005</th>
<th>ALC1007</th>
<th>TOTAL correlated</th>
<th>TOTAL independent</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0</td>
<td>10.5</td>
<td>4.9</td>
<td>60.1</td>
<td>15.9</td>
<td>3.5</td>
<td>44.6</td>
<td>139.5</td>
<td>144.6</td>
</tr>
<tr>
<td>25.0</td>
<td>11.2</td>
<td>5.5</td>
<td>62.4</td>
<td>17.3</td>
<td>3.9</td>
<td>44.7</td>
<td>144.8</td>
<td>147.8</td>
</tr>
<tr>
<td>45.0</td>
<td>11.6</td>
<td>5.9</td>
<td>63.8</td>
<td>18.3</td>
<td>4.2</td>
<td>44.7</td>
<td>148.7</td>
<td>149.9</td>
</tr>
<tr>
<td>50.0</td>
<td>11.8</td>
<td>6.0</td>
<td>64.2</td>
<td>18.6</td>
<td>4.3</td>
<td>44.7</td>
<td>149.6</td>
<td>150.4</td>
</tr>
<tr>
<td>55.0</td>
<td>11.9</td>
<td>6.1</td>
<td>64.8</td>
<td>18.9</td>
<td>4.4</td>
<td>44.7</td>
<td>150.6</td>
<td>151.0</td>
</tr>
<tr>
<td>75.0</td>
<td>12.5</td>
<td>6.7</td>
<td>66.2</td>
<td>20.4</td>
<td>4.8</td>
<td>44.8</td>
<td>155.5</td>
<td>153.4</td>
</tr>
<tr>
<td>95.0</td>
<td>13.7</td>
<td>7.9</td>
<td>69.7</td>
<td>25.1</td>
<td>5.9</td>
<td>44.9</td>
<td>166.4</td>
<td>159.1</td>
</tr>
<tr>
<td>97.5</td>
<td>14.1</td>
<td>8.3</td>
<td>71.0</td>
<td>27.8</td>
<td>6.5</td>
<td>44.9</td>
<td>170.7</td>
<td>161.7</td>
</tr>
<tr>
<td>99.0</td>
<td>14.7</td>
<td>9.0</td>
<td>72.5</td>
<td>32.1</td>
<td>7.2</td>
<td>44.9</td>
<td>176.7</td>
<td>165.5</td>
</tr>
<tr>
<td>99.5</td>
<td>15.1</td>
<td>9.3</td>
<td>73.8</td>
<td>37.0</td>
<td>7.9</td>
<td>45.0</td>
<td>180.7</td>
<td>170.0</td>
</tr>
<tr>
<td>99.9</td>
<td>16.1</td>
<td>10.1</td>
<td>75.6</td>
<td>54.1</td>
<td>9.9</td>
<td>45.0</td>
<td>190.3</td>
<td>182.7</td>
</tr>
<tr>
<td>ratio: 99.9/mean</td>
<td>135.5%</td>
<td>163.6%</td>
<td>117.2%</td>
<td>279.3%</td>
<td>222.3%</td>
<td>100.7%</td>
<td>126.2%</td>
<td>121.0%</td>
</tr>
</tbody>
</table>

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.

### Liabilities Over Full Term Horizon – Impact of Volatility Risk

<table>
<thead>
<tr>
<th>Product Code</th>
<th>Capital based on 2 years claims</th>
<th>Capital based on all liability cash flows</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALC 1001</td>
<td>3.4</td>
<td>6.2</td>
</tr>
<tr>
<td>ALC 1002</td>
<td>3.3</td>
<td>5.4</td>
</tr>
<tr>
<td>ALC 1003</td>
<td>9.5</td>
<td>16.8</td>
</tr>
<tr>
<td>ALC 1004</td>
<td>21.5</td>
<td>23.9</td>
</tr>
<tr>
<td>ALC 1005</td>
<td>3.9</td>
<td>12.9</td>
</tr>
<tr>
<td>ALC 1007</td>
<td>0.2</td>
<td>7.6</td>
</tr>
</tbody>
</table>

#### 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.

<table>
<thead>
<tr>
<th></th>
<th>Internal Model</th>
<th>Normal Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALC1001</td>
<td>3.4</td>
<td>3.2</td>
</tr>
<tr>
<td>ALC1002</td>
<td>3.3</td>
<td>3.2</td>
</tr>
<tr>
<td>ALC1003</td>
<td>9.5</td>
<td>9.1</td>
</tr>
<tr>
<td>ALC1004</td>
<td>21.5</td>
<td>30.9</td>
</tr>
<tr>
<td>ALC1005</td>
<td>3.9</td>
<td>3.7</td>
</tr>
</tbody>
</table>

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 focusing on this item. Such a model would most likely be a frequency / severity model that assumes probabilities of various types of catastrophes that vary by 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 occurring 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.

### Claims Over 2-Year Horizon – Catastrophe and Volatility Risk

<table>
<thead>
<tr>
<th>Capital</th>
<th>Risk Measure</th>
<th>Basis</th>
<th>ALC 1001</th>
<th>ALC 1002</th>
<th>ALC 1003</th>
<th>ALC 1004</th>
<th>ALC 1005</th>
<th>ALC 1007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volatility</td>
<td>CTE 99 (Vol)</td>
<td>100% Expected</td>
<td>15.3</td>
<td>9.5</td>
<td>74.0</td>
<td>40.8</td>
<td>8.3</td>
<td>45.0</td>
</tr>
<tr>
<td></td>
<td>CTE 0 (Vol)</td>
<td>100% Expected</td>
<td>11.9</td>
<td>6.2</td>
<td>64.5</td>
<td>19.4</td>
<td>4.4</td>
<td>44.7</td>
</tr>
<tr>
<td></td>
<td>Capital for volatility</td>
<td></td>
<td>3.4</td>
<td>3.3</td>
<td>9.5</td>
<td>21.5</td>
<td>3.9</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Catastrophe</td>
<td>CTE 99 (Cat+Vol)</td>
<td>200% Expected</td>
<td>21.5</td>
<td>13.3</td>
<td>109.0</td>
<td>44.3</td>
<td>12.8</td>
<td>44.9</td>
</tr>
<tr>
<td></td>
<td>CTE99(Vol)</td>
<td>100% Expected</td>
<td>15.3</td>
<td>9.5</td>
<td>74.0</td>
<td>40.8</td>
<td>8.3</td>
<td>45.0</td>
</tr>
<tr>
<td></td>
<td>Capital for catastrophe</td>
<td></td>
<td>6.2</td>
<td>3.8</td>
<td>35.1</td>
<td>3.5</td>
<td>4.4</td>
<td>(0.1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td>9.6</td>
<td>7.2</td>
<td>44.6</td>
<td>24.9</td>
<td>8.3</td>
<td>0.1</td>
</tr>
</tbody>
</table>
B. Catastrophe Risk Based on Present Value of Liability Cash Flows

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.

<table>
<thead>
<tr>
<th>Product Code</th>
<th>Capital based on 2 year ca</th>
<th>Capital based on all liability cash flows</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALC 1001</td>
<td>Term to 100 insurance</td>
<td>56,971</td>
</tr>
<tr>
<td></td>
<td>3.6 Billion</td>
<td></td>
</tr>
<tr>
<td>ALC 1002</td>
<td>Non-par Whole Life</td>
<td>5,000</td>
</tr>
<tr>
<td></td>
<td>0.9 Billion</td>
<td></td>
</tr>
<tr>
<td>ALC 1003</td>
<td>Term to 100 insurance</td>
<td>94,560</td>
</tr>
<tr>
<td></td>
<td>9.0 Billion</td>
<td></td>
</tr>
<tr>
<td>ALC 1004</td>
<td>1 year renewable Term</td>
<td>7,463</td>
</tr>
<tr>
<td></td>
<td>1.4 Billion</td>
<td></td>
</tr>
<tr>
<td>ALC 1005</td>
<td>5 year renewable term</td>
<td>3,450</td>
</tr>
<tr>
<td></td>
<td>0.5 Billion</td>
<td></td>
</tr>
<tr>
<td>ALC 1007</td>
<td>Payout Annuities</td>
<td>250</td>
</tr>
<tr>
<td></td>
<td>1.5 million / month</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Product Code</th>
<th>Capital based on 2 years claims</th>
<th>Capital based on all liability cash flows</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALC 1001</td>
<td>3.4</td>
<td>6.2</td>
</tr>
<tr>
<td></td>
<td>6.2</td>
<td>5.2</td>
</tr>
<tr>
<td>ALC 1002</td>
<td>3.3</td>
<td>3.8</td>
</tr>
<tr>
<td></td>
<td>5.4</td>
<td>2.5</td>
</tr>
<tr>
<td>ALC 1003</td>
<td>9.5</td>
<td>35.1</td>
</tr>
<tr>
<td></td>
<td>16.8</td>
<td>25.4</td>
</tr>
<tr>
<td>ALC 1004</td>
<td>21.5</td>
<td>3.5</td>
</tr>
<tr>
<td></td>
<td>23.9</td>
<td>10.6</td>
</tr>
<tr>
<td>ALC 1005</td>
<td>3.9</td>
<td>4.4</td>
</tr>
<tr>
<td></td>
<td>12.9</td>
<td>4.5</td>
</tr>
<tr>
<td>ALC 1007</td>
<td>0.2</td>
<td>(0.1)</td>
</tr>
<tr>
<td></td>
<td>7.6</td>
<td>(2.6)</td>
</tr>
</tbody>
</table>

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 lapse 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.

### Liabilities Under Lapse Misestimation Risk

<table>
<thead>
<tr>
<th>Percentile</th>
<th>Lapse rates</th>
<th>ALC 1001</th>
<th>ALC 1002</th>
<th>ALC 1003</th>
<th>ALC 1004</th>
<th>ALC 1005</th>
<th>Correlated</th>
<th>Independent</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0</td>
<td>Higher</td>
<td>138.1</td>
<td>49.2</td>
<td>742.5</td>
<td>(178.4)</td>
<td>(17.1)</td>
<td>965.3</td>
<td>951.0</td>
</tr>
<tr>
<td>25.0</td>
<td>Higher</td>
<td>148.7</td>
<td>52.3</td>
<td>787.6</td>
<td>(187.9)</td>
<td>(17.7)</td>
<td>1,006.1</td>
<td>999.7</td>
</tr>
<tr>
<td>45.0</td>
<td>Higher</td>
<td>154.6</td>
<td>54.1</td>
<td>812.6</td>
<td>(191.3)</td>
<td>(18.1)</td>
<td>1,028.4</td>
<td>1,026.2</td>
</tr>
<tr>
<td>50.0</td>
<td>Expected</td>
<td>155.9</td>
<td>54.5</td>
<td>818.1</td>
<td>(196.8)</td>
<td>(18.6)</td>
<td>1,033.7</td>
<td>1,032.2</td>
</tr>
<tr>
<td>55.0</td>
<td>Lower</td>
<td>157.2</td>
<td>54.9</td>
<td>824.0</td>
<td>(201.1)</td>
<td>(19.0)</td>
<td>1,039.2</td>
<td>1,038.6</td>
</tr>
<tr>
<td>75.0</td>
<td>Lower</td>
<td>163.2</td>
<td>56.5</td>
<td>847.0</td>
<td>(216.2)</td>
<td>(20.5)</td>
<td>1,061.8</td>
<td>1,064.6</td>
</tr>
<tr>
<td>95.0</td>
<td>Lower</td>
<td>173.9</td>
<td>59.1</td>
<td>884.7</td>
<td>(224.2)</td>
<td>(21.3)</td>
<td>1,097.5</td>
<td>1,105.6</td>
</tr>
<tr>
<td>97.5</td>
<td>Lower</td>
<td>177.4</td>
<td>59.9</td>
<td>895.9</td>
<td>(226.0)</td>
<td>(21.5)</td>
<td>1,107.0</td>
<td>1,118.3</td>
</tr>
<tr>
<td>99.0</td>
<td>Lower</td>
<td>181.3</td>
<td>60.7</td>
<td>910.3</td>
<td>(228.1)</td>
<td>(21.7)</td>
<td>1,119.7</td>
<td>1,133.8</td>
</tr>
<tr>
<td>99.5</td>
<td>Lower</td>
<td>183.8</td>
<td>61.3</td>
<td>917.0</td>
<td>(236.1)</td>
<td>(22.6)</td>
<td>1,126.7</td>
<td>1,143.1</td>
</tr>
<tr>
<td>99.9</td>
<td>Lower</td>
<td>188.9</td>
<td>62.4</td>
<td>933.4</td>
<td>(250.4)</td>
<td>(24.2)</td>
<td>1,147.4</td>
<td>1,160.7</td>
</tr>
</tbody>
</table>

| 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 |

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.

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

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.

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.

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:

<table>
<thead>
<tr>
<th>Liabilities Over Full Term Horizon – Lapse Volatility Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALC1001</td>
</tr>
<tr>
<td>Percentile:</td>
</tr>
<tr>
<td>5.0</td>
</tr>
<tr>
<td>25.0</td>
</tr>
<tr>
<td>45.0</td>
</tr>
<tr>
<td>50.0</td>
</tr>
<tr>
<td>55.0</td>
</tr>
<tr>
<td>75.0</td>
</tr>
<tr>
<td>95.0</td>
</tr>
<tr>
<td>97.5</td>
</tr>
<tr>
<td>99.0</td>
</tr>
<tr>
<td>99.5</td>
</tr>
<tr>
<td>99.9</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Percentile</th>
<th>Insurance</th>
<th>Annuity</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.00%</td>
<td>294.6</td>
<td>221.0</td>
</tr>
<tr>
<td>25.00%</td>
<td>406.0</td>
<td>226.3</td>
</tr>
<tr>
<td>45.00%</td>
<td>472.0</td>
<td>229.3</td>
</tr>
<tr>
<td>50.00%</td>
<td>489.2</td>
<td>230.4</td>
</tr>
<tr>
<td>55.00%</td>
<td>511.3</td>
<td>231.1</td>
</tr>
<tr>
<td>75.00%</td>
<td>577.0</td>
<td>236.5</td>
</tr>
<tr>
<td>95.00%</td>
<td>807.9</td>
<td>243.6</td>
</tr>
<tr>
<td>97.50%</td>
<td>836.8</td>
<td>244.9</td>
</tr>
<tr>
<td>99.00%</td>
<td>841.9</td>
<td>246.1</td>
</tr>
<tr>
<td>99.50%</td>
<td>842.7</td>
<td>246.6</td>
</tr>
<tr>
<td>99.90%</td>
<td>843.3</td>
<td>247.0</td>
</tr>
</tbody>
</table>

CTE

<table>
<thead>
<tr>
<th>Percentile</th>
<th>Insurance</th>
<th>Annuity</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00%</td>
<td>507.8</td>
<td>231.4</td>
</tr>
<tr>
<td>60.00%</td>
<td>657.1</td>
<td>238.9</td>
</tr>
<tr>
<td>80.00%</td>
<td>757.1</td>
<td>241.7</td>
</tr>
<tr>
<td>95.00%</td>
<td>838.9</td>
<td>245.6</td>
</tr>
<tr>
<td>99.00%</td>
<td>843.5</td>
<td>247.1</td>
</tr>
</tbody>
</table>

Total Capital / Margins:

<table>
<thead>
<tr>
<th></th>
<th>Insurance</th>
<th>Annuity</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTE 95</td>
<td>331.1</td>
<td>14.2</td>
</tr>
<tr>
<td>CTE 99</td>
<td>335.7</td>
<td>15.7</td>
</tr>
</tbody>
</table>
A.7.1.2 Considerations for Standardized Approaches

7.6 A simpler standardized approach is one that would not require the company to perform asset-liability 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.

### Basel II (Advanced)

<table>
<thead>
<tr>
<th>Assets</th>
<th>Par Value (Exposure at Default)</th>
<th>Book Value</th>
<th>Required Capital</th>
<th>As % Par Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash and equivalents</td>
<td>129,767</td>
<td>129,767</td>
<td>-</td>
<td>0.0%</td>
</tr>
<tr>
<td>Bonds of OECD countries</td>
<td>654,903</td>
<td>661,189</td>
<td>-</td>
<td>0.0%</td>
</tr>
<tr>
<td>Subtotal</td>
<td>784,670</td>
<td>790,956</td>
<td>-</td>
<td>0.0%</td>
</tr>
<tr>
<td>Corporate Bonds</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AAA</td>
<td>127,387</td>
<td>135,924</td>
<td>1,843</td>
<td>1.4%</td>
</tr>
<tr>
<td>AA</td>
<td>325,341</td>
<td>332,544</td>
<td>5,815</td>
<td>1.8%</td>
</tr>
<tr>
<td>A</td>
<td>204,578</td>
<td>205,706</td>
<td>5,730</td>
<td>2.8%</td>
</tr>
<tr>
<td>BBB</td>
<td>105,003</td>
<td>111,635</td>
<td>7,419</td>
<td>7.1%</td>
</tr>
<tr>
<td>Subtotal</td>
<td>762,309</td>
<td>785,809</td>
<td>20,807</td>
<td>2.7%</td>
</tr>
<tr>
<td>Total</td>
<td>1,546,979</td>
<td>1,576,765</td>
<td>20,807</td>
<td>1.3%</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Assets</th>
<th>Par Value (Exposure at Default)</th>
<th>Required Capital</th>
<th>As % Par Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basel II (Advanced)</td>
<td>762,309</td>
<td>20,807</td>
<td>2.7%</td>
</tr>
<tr>
<td>Basel II (Standard)</td>
<td>762,309</td>
<td>23,827</td>
<td>3.1%</td>
</tr>
<tr>
<td>Basel II (Foundation)</td>
<td>762,309</td>
<td>11,485</td>
<td>1.5%</td>
</tr>
<tr>
<td>Basel 1988 Accord</td>
<td>762,309</td>
<td>60,985</td>
<td>8.0%</td>
</tr>
<tr>
<td>Internal Models</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model (1)</td>
<td>762,309</td>
<td>12,197</td>
<td>1.6%</td>
</tr>
<tr>
<td>Model (2)</td>
<td>762,309</td>
<td>19,343</td>
<td>2.5%</td>
</tr>
<tr>
<td>Model (3)</td>
<td>762,309</td>
<td>26,229</td>
<td>3.4%</td>
</tr>
</tbody>
</table>

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. 9 The 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
## Alternate Reinsurance Structures Applicable to Product ALC 1001

<table>
<thead>
<tr>
<th>Reinsurance</th>
<th>Description</th>
<th>Amount of cession</th>
<th>Reinsurance premiums</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Gross of reinsurance</td>
<td>No reinsurance</td>
<td>0</td>
<td>N/A</td>
</tr>
<tr>
<td>2. YRT Coinsurance at neutral reinsurance rates</td>
<td>45% of sum assured ceded on YRT basis</td>
<td>Excess of sum assured over $50,000; roughly $2 billion in aggregate</td>
<td>YRT at 70% of Industry table, with annual adjustments equal to Company’s expected trend</td>
</tr>
<tr>
<td>3. YRT Excess reinsurance, at neutral rates</td>
<td>Sum assured in excess of $50,000 ceded on YRT basis</td>
<td>90% sum assured on each policy; roughly $3.2 billion in aggregate</td>
<td>As 2. Above</td>
</tr>
<tr>
<td>4. YRT coinsurance, neutral rates</td>
<td>90% of sum assured ceded on YRT basis</td>
<td>As 2. Above</td>
<td>As 2. Above</td>
</tr>
<tr>
<td>5. YRT Coinsurance at low rates</td>
<td>45% of sum assured ceded on YRT basis</td>
<td>As 2. Above</td>
<td>YRT at 70% of Industry table, with annual adjustments equal to Company’s expected trend</td>
</tr>
<tr>
<td>6. YRT Excess at low rates</td>
<td>Sum assured in excess of $50,000 ceded on YRT basis</td>
<td>As 3. Above</td>
<td>YRT at 70% of Industry table, with annual adjustments equal to Company’s expected trend</td>
</tr>
<tr>
<td>7. Quota Share</td>
<td>Reinsurer accepts 45% of all cashflows</td>
<td>45% of all cashflows</td>
<td>N/A</td>
</tr>
</tbody>
</table>

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 itself 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.

### Effect of Reinsurance on Mortality Capital
**Product ALC 1001 Only**

<table>
<thead>
<tr>
<th>Reinsurance</th>
<th>Ceded:</th>
<th>Reinsurance Premiums</th>
<th>Capital for Mortality Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Level</td>
</tr>
<tr>
<td>1 Gross</td>
<td>N/A</td>
<td>N/A</td>
<td>43.1</td>
</tr>
<tr>
<td>2 Coinsurance</td>
<td>45%</td>
<td>70% Table</td>
<td>20.9</td>
</tr>
<tr>
<td>3 Excess retention</td>
<td>&gt;$50,000</td>
<td>70% Table</td>
<td>22.3</td>
</tr>
<tr>
<td>4 Coinsurance</td>
<td>90%</td>
<td>70% Table</td>
<td>2.2</td>
</tr>
<tr>
<td>5 Coinsurance</td>
<td>45%</td>
<td>45% Table</td>
<td>23.3</td>
</tr>
<tr>
<td>6 Excess retention</td>
<td>&gt;$50,000</td>
<td>45% Table</td>
<td>23.6</td>
</tr>
<tr>
<td>7 Quota Share</td>
<td>45%</td>
<td>N/A</td>
<td>24.3</td>
</tr>
</tbody>
</table>

### 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:

$$TVaR_{99\%} – \text{Expected Net Losses on Current Business} – \text{Net Loss Reserve}$$

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.

Table 1
Statistics for the Sample Insurance Companies

<table>
<thead>
<tr>
<th>Line of Insurance</th>
<th>ABC Insurance Company</th>
<th>XYZ Insurance Company</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Direct Premium</td>
<td>Loss Reserve</td>
</tr>
<tr>
<td>Auto Liability</td>
<td>430,000,000</td>
<td>403,110,711</td>
</tr>
<tr>
<td>Auto Physical Damage</td>
<td>325,000,000</td>
<td>19,455,630</td>
</tr>
<tr>
<td>Homeowners</td>
<td>475,000,000</td>
<td>162,578,183</td>
</tr>
<tr>
<td>Commercial Liability</td>
<td>130,000,000</td>
<td>352,190,005</td>
</tr>
<tr>
<td>Commercial Property</td>
<td>200,000,000</td>
<td>62,204,206</td>
</tr>
<tr>
<td>Total</td>
<td>1,560,000,000</td>
<td>999,538,735</td>
</tr>
</tbody>
</table>
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%, \( (\text{TVaR}_{99\%}) \), 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 \( \chi_i \) 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 \( \lambda_i \) is the expected claim count for line of insurance \( i \).
   - For each \( i \) and for \( k = 1, \ldots, K_i \), select a random claim size, \( Z_{ik} \), from a lognormal distribution with mean \( \mu_i \) and standard deviation \( \sigma_i \).

2. Set \( X_i = \sum_{k=1}^{K_i} Z_{ik} = \text{Loss for line of insurance } i \).

3. Select a random number \( p_i \), from a uniform (0,1) distribution. For each line \( i \), select \( \beta_i \) to be the \( p_i \)th percentile of a distribution with \( E[\beta_i] = 1 \) and \( \text{Var}[\beta_i] = b_i \). This gives a multivariate distribution of the \( \beta_i \)'s in which each coefficient of correlation, \( \rho_{ij} \), is equal to 1.

4. Set \( X = \sum_i \beta_i \cdot X_i = \text{Loss for the insurer} \).

3.6 Here are the formulas used to calculate the first two moments of \( X \).

1. \( E[X_i] = \lambda_i \mu_i \)
2. \( E[X] = \sum_i E[X_i] \)
3. \( \text{Var}[K_i] = \lambda_i + c_i \lambda_i^2 \)
4. \( \text{Var}[X_i] = \lambda_i \sigma_i^2 + \mu_i^2 (\lambda_i + c_i \lambda_i^2) \)
5. \( \text{Var}[\beta_i X_i] = \text{Cov}[\beta_i X_i, \beta_j X_j] \)
   \[ = (1+b_i)\text{Var}[X_i] + E[X_i]^2 b_i = (1+b_i)(\lambda_i \sigma_i^2 + \mu_i^2 (\lambda_i + c_i \lambda_i^2)) + b_i \mu_i^2 \lambda_i^2 \]
6. For \( i \neq j \) \( \text{Cov}[\beta_i X_i, \beta_j X_j] = \lambda_i \mu_i \lambda_j \mu_j \rho_{ij} \sqrt{b_i b_j} \) (Note that we assume that \( \rho_{ij} = 1 \).)
7. \( \text{Var}[X] = \sum_i \sum_j \text{Cov}[\beta_i X_i, \beta_j X_j] \)
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 Willmot\(^\text{10}\) (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 \( \alpha \), \( VaR_\alpha(X) \), (i.e., the \( \alpha \)th percentile) of the lognormal distribution.

3. Calculate the limited expected value, \( E[X^{VaR_\alpha(X)}] \) for the lognormal distribution.

4. Then \( TVaR_\alpha(X) = VaR_\alpha(X) + \frac{E[X] - E[X^{VaR_\alpha(X)}]}{1-\alpha} \)

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 \( \text{Var}[X]/(nE[X]) \). 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.

\[
\text{Var} \left[ \frac{\beta_i X_i}{E[\beta_i X_i]} \right] = (1+b_i) \left( \frac{\mu_i^2 + \sigma_i^2}{\lambda_i} + c_i \right) + b_i
\]

3.11 As \( \lambda_i \) 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 Lalonde\(^\text{11}\) (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.


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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 $0.04 = 0.05^2 + c_i + 0.05^2 c_i$ 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.

<table>
<thead>
<tr>
<th>Line Name</th>
<th>Mean_i</th>
<th>CV_i</th>
<th>c_i</th>
<th>b_i</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto Liability</td>
<td>6,000</td>
<td>7</td>
<td>0.02</td>
<td>0.003</td>
</tr>
<tr>
<td>AL – Reserve</td>
<td>18,000</td>
<td>4</td>
<td>0.02</td>
<td>0.003</td>
</tr>
<tr>
<td>Auto Phys Dam</td>
<td>1,500</td>
<td>2</td>
<td>0.01</td>
<td>0.002</td>
</tr>
<tr>
<td>APD – Reserve</td>
<td>1,500</td>
<td>2</td>
<td>0.01</td>
<td>0.002</td>
</tr>
<tr>
<td>Homeowners</td>
<td>4,000</td>
<td>5</td>
<td>0.04</td>
<td>0.010</td>
</tr>
<tr>
<td>HO – Reserve</td>
<td>5,000</td>
<td>4</td>
<td>0.04</td>
<td>0.010</td>
</tr>
<tr>
<td>Business Liability</td>
<td>16,000</td>
<td>16</td>
<td>0.03</td>
<td>0.003</td>
</tr>
<tr>
<td>BL – Reserve</td>
<td>65,000</td>
<td>10</td>
<td>0.03</td>
<td>0.003</td>
</tr>
<tr>
<td>Business Property</td>
<td>20,000</td>
<td>12</td>
<td>0.04</td>
<td>0.010</td>
</tr>
<tr>
<td>BP – Reserve</td>
<td>20,000</td>
<td>12</td>
<td>0.04</td>
<td>0.010</td>
</tr>
</tbody>
</table>

4.3 Using formulas in Appendix A of KPW, the insurer then calculates the parameters $\mu_i$ and $\sigma_i$ after the application of reinsurance. The $\mu_i$’s and the $\sigma_i$’s for no reinsurance, and for reinsurance covering the excess over $1$ million per claim are given in Table 3.
Table 3
Moments of the Claim Severity Distributions

<table>
<thead>
<tr>
<th>Line Name</th>
<th>No Reinsurance</th>
<th>Excess Reinsurance over $1 Million</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\mu_i$</td>
<td>$\sigma_i$</td>
</tr>
<tr>
<td>Auto Liability</td>
<td>6,000</td>
<td>42,000</td>
</tr>
<tr>
<td>AL – Reserve</td>
<td>18,000</td>
<td>72,000</td>
</tr>
<tr>
<td>Auto Phys Dam</td>
<td>1,500</td>
<td>3,000</td>
</tr>
<tr>
<td>APD – Reserve</td>
<td>1,500</td>
<td>3,000</td>
</tr>
<tr>
<td>Homeowners</td>
<td>4,000</td>
<td>20,000</td>
</tr>
<tr>
<td>HO – Reserve</td>
<td>5,000</td>
<td>20,000</td>
</tr>
<tr>
<td>Business Liability</td>
<td>16,000</td>
<td>256,000</td>
</tr>
<tr>
<td>BL – Reserve</td>
<td>65,000</td>
<td>650,000</td>
</tr>
<tr>
<td>Business Property</td>
<td>20,000</td>
<td>240,000</td>
</tr>
<tr>
<td>BP – Reserve</td>
<td>20,000</td>
<td>240,000</td>
</tr>
</tbody>
</table>

4.4 The next step is for the insurer to provide estimates of the expected claim counts, $\lambda_i$, for each line of insurance. These estimates are derived by dividing the expected claim severity, $\mu_i$, 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 $\lambda_i$’s used in this case study. These $\lambda_i$’s were determined by dividing the $\mu_i$’s in Table 3 into the insurer estimates of its expected losses by line when there is no reinsurance.

Table 4
Expected Claim Counts

<table>
<thead>
<tr>
<th>Line Name</th>
<th>ABC Insurance Company</th>
<th>XYZ Insurance Company</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Expected Loss</td>
<td>$\lambda_i$</td>
</tr>
<tr>
<td>Auto Liability</td>
<td>350,000,000</td>
<td>58,333.33</td>
</tr>
<tr>
<td>AL – Reserve</td>
<td>403,110,711</td>
<td>22,395.04</td>
</tr>
<tr>
<td>Auto Phys Dam</td>
<td>250,000,000</td>
<td>166,666.67</td>
</tr>
<tr>
<td>APD – Reserve</td>
<td>19,455,630</td>
<td>12,970.42</td>
</tr>
<tr>
<td>Homeowners</td>
<td>350,000,000</td>
<td>87,500.00</td>
</tr>
<tr>
<td>HO – Reserve</td>
<td>162,578,183</td>
<td>32,515.64</td>
</tr>
<tr>
<td>Business Liability</td>
<td>100,000,000</td>
<td>6,250.00</td>
</tr>
<tr>
<td>BL – Reserve</td>
<td>352,190,005</td>
<td>5,418.31</td>
</tr>
<tr>
<td>Business Property</td>
<td>150,000,000</td>
<td>7,500.00</td>
</tr>
<tr>
<td>BP – Reserve</td>
<td>62,204,206</td>
<td>3,110.21</td>
</tr>
</tbody>
</table>

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.
Table 5  
Moments of the Aggregate Loss Distributions

<table>
<thead>
<tr>
<th>Reinsurance</th>
<th>ABC Insurance Company</th>
<th>XYZ Insurance Company</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>None</td>
<td>XS $1 Million</td>
</tr>
<tr>
<td>$E[X]$</td>
<td>2,199,538,735</td>
<td>2,028,476,777</td>
</tr>
<tr>
<td>StdDev$[X]$</td>
<td>209,192,020</td>
<td>186,362,345</td>
</tr>
</tbody>
</table>

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:

$$TVaR_{99\%} - \frac{\text{Expected Net Loss}}{\text{On Current Business}} - \frac{\text{Net Loss Reserve}}{\text{All Lines}} + \text{Catastrophe PML}$$

4.9  The final risk-based capital calculations for the various reinsurance strategies are included in Table 6.

Table 6  
Risk-Based Capital from Factor Based Formula

<table>
<thead>
<tr>
<th>Reinsurance</th>
<th>ABC Insurance Company</th>
<th>XYZ Insurance Company</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>None</td>
<td>Cat Only</td>
</tr>
<tr>
<td>$TVaR_{99%}$</td>
<td>2,821,018,276</td>
<td>2,821,018,276</td>
</tr>
<tr>
<td>Expected Loss</td>
<td>1,200,000,000</td>
<td>1,200,000,000</td>
</tr>
<tr>
<td>Reserve</td>
<td>999,538,735</td>
<td>999,538,735</td>
</tr>
<tr>
<td>Cat PML</td>
<td>143,000,000</td>
<td>65,000,000</td>
</tr>
</tbody>
</table>

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 risk-based capital formula. The working party believes that a model underlying a prescribed risk-based 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 risk-based capital charge derived from the internal risk management model for the ABC and XYZ Insurance Companies for the various reinsurance strategies.

<table>
<thead>
<tr>
<th>Reinsurance</th>
<th>ABC Insurance Company</th>
<th>XYZ Insurance Company</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>None</td>
<td>Cat Only</td>
</tr>
<tr>
<td>$TVaR_{99%}$</td>
<td>2,665,306,927</td>
<td>2,649,246,793</td>
</tr>
<tr>
<td>Expected Loss</td>
<td>1,215,000,000</td>
<td>1,212,045,992</td>
</tr>
<tr>
<td>Reserve</td>
<td>999,538,735</td>
<td>999,538,735</td>
</tr>
<tr>
<td>Capital</td>
<td>450,768,192</td>
<td>437,662,066</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Reinsurance</th>
<th>ABC Insurance Company</th>
<th>XYZ Insurance Company</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>None</td>
<td>Cat Only</td>
</tr>
<tr>
<td>TVaR_{spp}</td>
<td>2,821,018,276</td>
<td>2,821,018,276</td>
</tr>
<tr>
<td>Expected Loss + PAD@75%</td>
<td>1,343,215,450</td>
<td>1,343,215,450</td>
</tr>
<tr>
<td>Reserve + PAD@75%</td>
<td>1,129,887,753</td>
<td>1,129,887,753</td>
</tr>
<tr>
<td>Cat PML</td>
<td>143,000,000</td>
<td>65,000,000</td>
</tr>
<tr>
<td>Capital</td>
<td>490,915,073</td>
<td>412,915,073</td>
</tr>
</tbody>
</table>
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:

$$BE \text{ first period} = n \cdot d \cdot l$$

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 projection\(^{12}\). 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:

\[ N : \text{the number of claims}; \]
\[ X_i : \text{the claim size of the } i\text{-th claim, with } i = 1, 2, \ldots, N; \]
\[ S = \Sigma X_i , \text{the total claims volume}. \]

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.
4.9 For the expectation, variance and skewness of \( S \), we have:

\[
E[S] = E[N]E[X_i] \quad (1)
\]

\[
\text{Var}[S] = E[N]E[X_i^2] \quad (2)
\]

\[
\gamma[S] = E[N]E[X_i^3]/\text{Var}[S]^{3/2} \quad (3)
\]

\( E[S] \) 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:

\[
E[N] = \text{number of insureds} \times \text{observed average claims frequency} \quad (4)
\]

\( E[X_i] \) 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

<table>
<thead>
<tr>
<th>Number of policies:</th>
<th>130,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average claim frequency per insured</td>
<td>5%</td>
</tr>
<tr>
<td>Expected aggregate number of claims</td>
<td>6,500</td>
</tr>
<tr>
<td>Claim severity distribution:</td>
<td></td>
</tr>
<tr>
<td>Mean ($)</td>
<td>4,125</td>
</tr>
<tr>
<td>Variance</td>
<td>70,074,170</td>
</tr>
<tr>
<td>Third central moment</td>
<td>9.28072E+12</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Mean</th>
<th>26,811,351</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variance</td>
<td>455,482,101,858</td>
</tr>
<tr>
<td>Skewness</td>
<td>0.20</td>
</tr>
</tbody>
</table>
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:

Table 3: 99% upper limit of aggregate losses $S$ with respect to volatility risk

<table>
<thead>
<tr>
<th>Distribution</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Translated gamma distribution</td>
<td>28,478,025</td>
</tr>
<tr>
<td>Normal distribution</td>
<td>28,381,385</td>
</tr>
<tr>
<td>Normal power distribution</td>
<td>28,478,771</td>
</tr>
</tbody>
</table>

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.

Uncertainty

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.

Short Term Uncertainty Risk

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.

The framework outlined in the P&C case study can be applied to medical insurance as follows:

There is a single line ‘medical insurance’ for which parameters $b_i$, $c_i$, $\lambda_i$, $\mu_i$ and $\sigma_i$ need to be estimated. As we are looking at a single line only, the index $i$ can be omitted so we will use $b$, $c$, $\lambda$, $\mu$ and $\sigma$ instead.

$\lambda$: expected claim count (number of in-force policies * expected claim frequency);
$\mu$, $\sigma$: 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:
\[
\text{Var(loss ratio)} = (b + c + bc) \cdot \text{E}[\text{loss ratio}]^2
\]  \hspace{1cm} (5)

4.22 As an approximation for the loss ratio of an infinitely large portfolio, one can use the industry-wide 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:
\[
\text{Var(loss ratio)} = (b + c + bc) \cdot \text{E}[\text{loss ratio}]^2 \quad \text{hence}
\]
\[
0.2^2 = (b + c + bc) \cdot 0.6^2 \]  \hspace{1cm} (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 \( \beta \) (as mentioned in the P&C case study) with expectation 1, we have:
\[
1 + \text{Medical Inflation}[t+1] = \beta \cdot (1 + \text{average medical inflation}).
\]
Therefore,
\[
\text{Variance (1+ Medical inflation}[t+1]) =
\]
\[
\text{Var}[\beta] \cdot (1+\text{average medical inflation})^2.
\]

Also,
\[
\text{Variance (1+ Medical inflation}[t+1]) = \text{Variance (Annual Medical Inflation})
\]
and \( \quad b = \text{Var}[\beta]. \)

It follows that:
\[
b = \text{Variance (Annual Medical Inflation}/(1+\text{average medical inflation})^2. \]  \hspace{1cm} (7)

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:
\[
\text{(Capital uncertainty)}^2 =
\]
\[
\text{(Capital uncertainty and volatility combined)}^2 - \text{(Capital for volatility)}^2.
\]

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.
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:

$$\text{INF}(t) = c_0 + c_1 \text{INF}(t-1) + c_2 \text{INF}(t-2) + \text{random error}(t)$$

with:

- $\text{INF}(t)$: medical inflation in year $t$;
- $c_0$, $c_1$, $c_2$: model parameters.

$\text{random error}(t)$: 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 change 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. $\mu$: 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 $\mu$, 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-hospital and out-of-hospital services and also vary substantially between various types of out-of-hospital services (for example medical, pharmaceutical, 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.

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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.

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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.

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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 sophistication 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 determine 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.

<table>
<thead>
<tr>
<th>Traditional Banking</th>
<th>Traditional Insurance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recipe approach</td>
<td>Global in scope</td>
</tr>
<tr>
<td>Detailed single risk (silo) models</td>
<td>Generalized, multiple risks</td>
</tr>
<tr>
<td>Risk neutral (pricing)</td>
<td>Real world (cash flow)</td>
</tr>
<tr>
<td>Preference for analytic forms</td>
<td>Preference for “moving parts”</td>
</tr>
<tr>
<td>Variance reduction</td>
<td>Monte Carlo simulation</td>
</tr>
<tr>
<td>Accurate (within narrow scope)</td>
<td>No objective market benchmark</td>
</tr>
<tr>
<td>Calibrates to market (volatility)</td>
<td>Complex calibration &amp; estimation</td>
</tr>
</tbody>
</table>

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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 non-financial 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 full hedge against the financial 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 always 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. Bouwknecht 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 in German UL-business. If so, it will also be possible to measure the sensitivity of these market values to changes in asset yields. Therefore, including these

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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 satisfied\(^\text{17}\).

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 spot yields 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 spot yield 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:

\[
\begin{align*}
    r_t^{\text{spot}} &= \beta_0 + (\beta_1 + \beta_2) \cdot \frac{1 - \exp\left(-\frac{t}{\tau}\right)}{\tau} - \beta_2 \cdot \exp\left(-\frac{t}{\tau}\right) \\
\end{align*}
\]

6.23 The parameters to be estimated are \(\beta_0, \beta_1, \beta_2\) and \(\tau\). Nice characteristics of this specification are:
- the specification is reasonably parsimonious
- the spot yield for the very short duration is equal to \(\beta_0 + \beta_1\)
- the estimated spot yields for the long term converge to \(\beta_0\).

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 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).

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:
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 $\sigma_{bond}$ values rather than $\sigma_{bond}^2$ values (which would apply if bond returns were independent).

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.

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

$$\sigma_{FX} \approx 0.1 \cdot assetValue$$

Again, this may be either used with a conservative factor or replaced by a statistical assessment.

The two risk components $\sigma_{bond}$ and $\sigma_{FX}$ can be combined as described in Section 3.4.1:

$$\sigma_{foreignBond} \approx \sqrt{\sigma_{bond}^2 + \sigma_{FX}^2} \approx \sqrt{\frac{meanTimeToMaturity^2}{100^2} + 0.01}$$

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.

The formulas for $\sigma_{foreignBond}$ and $\sigma_{bond}$ 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 asset-liability 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.

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.

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

\[ \sigma_{\text{foreignEquity}} \approx \sqrt{\sigma_{\text{equity}}^2 + \sigma_{\text{FX}}^2} \]

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 kinds 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 fixed-interest, 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 \( \text{dur}^{(1)} = 1 \), \( \text{dur}^{(2)} = 3.5 \), \( \text{dur}^{(3)} = 6.5 \), \( \ldots \), \( \text{dur}^{(7)} \) = say 28 and corresponding actual (risk-free) spot yields \( (r^{(1)}, r^{(2)}, \ldots) \) 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 \( (S^{(\text{fix})(1)}, S^{(\text{fix})(2)}, \ldots) \) and define the solvency requirement for each duration band \( i \) as \( \text{Solv}^{(\text{fix})(i)} = \text{ABS} \{S^{(\text{fix})(i)} \times \text{dur}^{(i)} \times \Delta r^{(i)}\} \).

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:
   \[ \text{Solv}^{(\text{fix})} = \sum_{i} \text{Solv}^{(\text{fix})(i)} \]

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 \( (\Delta r^{(1)}, \Delta r^{(2)}, \ldots) \) or \( (-\Delta r^{(1)}, -\Delta r^{(2)}, \ldots) \) 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.
References


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 off-balance 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 its 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 include

• 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

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18 Canadian Institute of Actuaries, 2003 Report of the CIA Sub-Committee on Credit Risk
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 risk\(^1\). 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

\[
100 \frac{(1 - p)}{(1 + i)} + 100 \frac{p R}{(1 + i)}
\]

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.

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\(^1\) 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 [http://www.actuaries.asn.au](http://www.actuaries.asn.au)
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

$$\text{assetValue} \approx (1 - p_T) \cdot \text{principal}$$

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

$$\sigma_{\text{credit}}^2(T) \approx p_T \cdot \text{assetValue}^2$$

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 $\sigma_{\text{credit}}^2 = \sigma_{\text{credit}}^2(1\text{year})$ due to credit risk, rather than just $\sigma_{\text{credit}}^2(T)$. This variance $\sigma_{\text{credit}}^2$ 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

$$p_T = 1 - \Phi \left( \frac{\text{const}}{\sqrt{T}} \right)$$

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:

$$p_T = 1 - \Phi \left[ \sqrt{\frac{1\text{year}}{T}} \Phi^{-1}(1 - p_1) \right]$$

where $\Phi^{-1}$ is the inverse function of $\Phi$, 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:

\[
\sigma_{credit}^2 \approx \frac{1}{T} \frac{1}{p_T} \left\{ 1 - \Phi \left[ \frac{1}{T} \Phi^{-1}(1 - p_1) \right] \right\}
\]

or, as a numerical approximation in closed form,

\[
\sigma_{credit}^2 \approx \frac{1}{T} \frac{1}{p_1} \left[ \frac{1}{b} \left( \frac{1}{T} \frac{1}{\sqrt{c - \log p_1 - c + c} \cdot \log p_1 - c + c} \right) \right]^2
\]

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

\[
\sigma_{credit} \approx \sqrt{0.002 \cdot \text{assetValue}} \approx 4.5\% \cdot \text{assetValue}
\]

For the 5-year bond, we obtain a credit risk of \( \sigma_{credit} \approx 18.3\% \cdot \text{assetValue} \). 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

\[
\sigma_{credit,\max}^2 = \left( \sum_i \sigma_{credit,i}^2 \right)^2
\]

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

\[
\sigma_{\text{credit}}^2 = \frac{\alpha}{2} \sum_i \sigma_{\text{credit},i}^2 + \left(1 - \frac{\alpha}{2}\right) \left(\sum_i \sigma_{\text{credit},i}\right)^2
\]

where \(\alpha\) 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:

\[
\sigma_{\text{fixedIncome}} \approx \sqrt{\sigma_{\text{bond,market}}^2 + \sigma_{\text{credit}}^2}
\]

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.
In September 1998 a number of complaints were made to the Pensions Ombudsman as some policyholders believed that the Society’s stance was unlawful.

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.

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.

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.

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.

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 mis-selling.

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.

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**

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 policies
If 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)

<table>
<thead>
<tr>
<th>Probability of SUFFICIENCY PoS</th>
<th>Level</th>
<th>$ needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>50%</td>
<td>Central estimate</td>
<td>$250</td>
</tr>
<tr>
<td>75%</td>
<td>Illustrative Supervisor’s Minimum Requirement</td>
<td>$262</td>
</tr>
<tr>
<td>90%</td>
<td>Illustrative Company Standard</td>
<td>$272</td>
</tr>
</tbody>
</table>
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:

<table>
<thead>
<tr>
<th>RESULT</th>
<th>FREQUENCY</th>
<th>CLAIMS $</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>7</td>
<td>14</td>
</tr>
<tr>
<td>3</td>
<td>7</td>
<td>21</td>
</tr>
<tr>
<td>4</td>
<td>7</td>
<td>28</td>
</tr>
<tr>
<td>5</td>
<td>7</td>
<td>35</td>
</tr>
<tr>
<td>6</td>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>105</td>
</tr>
</tbody>
</table>

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)
14 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:

<table>
<thead>
<tr>
<th>RESULT</th>
<th>FREQUENCY</th>
<th>CLAIMS $</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>3</td>
<td>20</td>
<td>60</td>
</tr>
<tr>
<td>4</td>
<td>20</td>
<td>80</td>
</tr>
<tr>
<td>5</td>
<td>18</td>
<td>90</td>
</tr>
<tr>
<td>6</td>
<td>22</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>260</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>PoS</th>
<th>Liability</th>
<th>MCR</th>
<th>Total Funds Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>75%</td>
<td>262</td>
<td>100</td>
<td>362</td>
</tr>
<tr>
<td>90%</td>
<td>272</td>
<td>100</td>
<td>372</td>
</tr>
</tbody>
</table>

Illustration - Capital Needed

4.4 What capital does insurer need to have in addition to the premium charged to be able to operate?

<table>
<thead>
<tr>
<th>PoS</th>
<th>Total Funds</th>
<th>Premium Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>362</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td>372</td>
<td>72</td>
</tr>
</tbody>
</table>

4.5 Note that this reflects the minimum capital support position.

Illustration Profit (Loss) & Returns on capital (RoC)

<table>
<thead>
<tr>
<th>PoS</th>
<th>CAPITAL LEVEL</th>
<th>WORST RESULT</th>
<th>BEST RESULT</th>
<th>EXPECTED RESULT</th>
<th>EXPECTED RoC</th>
</tr>
</thead>
<tbody>
<tr>
<td>75%</td>
<td>62</td>
<td>(200)</td>
<td>300</td>
<td>50</td>
<td>80% = 50/62</td>
</tr>
<tr>
<td>90%</td>
<td>72</td>
<td>(200)</td>
<td>300</td>
<td>50</td>
<td>69% = 50/72</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>PoS</th>
<th>CAPITAL LEVEL</th>
<th>EXPECTED PROFIT BEFORE REINSURANCE</th>
<th>REINSURANCE COST</th>
<th>EXPECTED PROFIT AFTER REINSURANCE</th>
<th>EXPECTED RoC</th>
</tr>
</thead>
<tbody>
<tr>
<td>75%</td>
<td>62</td>
<td>50</td>
<td>38</td>
<td>12</td>
<td>19%</td>
</tr>
<tr>
<td>90%</td>
<td>72</td>
<td>50</td>
<td>36</td>
<td>14</td>
<td>19%</td>
</tr>
</tbody>
</table>

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 $\mu$ is the mean of the distribution, $\sigma^2$ 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 first-order 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 $X_1, X_2, \ldots, X_n$ 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:

$$
\begin{pmatrix}
\sigma_1^2 & \rho_{12}\sigma_1\sigma_2 & \cdots & \rho_{1n}\sigma_1\sigma_n \\
\rho_{12}\sigma_1\sigma_2 & \sigma_2^2 & \cdots & \rho_{2n}\sigma_2\sigma_n \\
\vdots & \vdots & \ddots & \vdots \\
\rho_{1n}\sigma_1\sigma_n & \rho_{2n}\sigma_2\sigma_n & \cdots & \sigma_n^2
\end{pmatrix},
$$
1.9  Where $\rho_{i,j}$ is the correlation between the $i$-th and the $j$-th risk components, and $\sigma_j$ is the standard deviation of the $j$-th component.

1.10  The standard deviation of the aggregate distribution is $\sigma = \sqrt{\sum_{i,j=1}^{n} \rho_{i,j} \sigma_i \sigma_j}$.

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 may not be well suited to combining interactions in the extreme tails of the 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 99\textsuperscript{th} 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 from 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 fat-tailed 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 \(\Phi\) is the standard normal cumulative distribution function. The Wang transform of a Normal distribution with mean \(\mu\) and standard deviation (volatility) \(\sigma\) is another Normal distribution but with the mean replaced by \(\mu + \lambda \sigma\) and the standard deviation, \(\sigma\), 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

\[ C(e_1, e_2, \ldots) = \int x \cdot dg[F(x)] \]

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 2,11-25t
where \( Y_j \) is a new standardized loss variable.

\[
C(\lambda e_1, \lambda e_2, \ldots) = \lambda C(e_1, e_2, \ldots).
\]

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 \( e_1^0, e_2^0, \ldots \). 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 \( e_1^0, e_2^0, \ldots \). A simple Taylor expansion about this point yields

\[
C(e_1, e_2, \ldots, e_n) = C(e_1^0, e_2^0, \ldots) + \sum_j \frac{\partial C}{\partial e_j^0} \cdot (e_j - e_j^0) + \text{second order terms}.
\]

4.3 However, the homogeneity of the capital results in

\[
C(e_1, e_2, \ldots) = \sum_j \frac{\partial C}{\partial e_j^0} \cdot e_j + \text{second order \& higher order terms}.
\]

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.
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

$$r_{i,j} = \frac{1}{2} \frac{\partial^2 C^2}{\partial e_i^o \partial e_j^o}$$

then a Taylor expansion of the function of $C^2$ shows that

$$C^2(e_1, e_2, ..., e_n) = \sum_{i,j} r_{i,j} e_i e_j + \text{third & higher order terms.}$$

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 target risk mix. This is in the same spirit as the base-line capital formula suggested above.

5.4 A paper\textsuperscript{21} 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.

6.1 The approximation process generalizes to arbitrary $m$ in the sense that if we look at a Taylor expansion of $C^m$ we find that the first $m$ terms of the expansion collapse down to an expression of the form

$$C^m(e_1, e_2, ..., e_n) = \frac{1}{m!} \sum_{i_1, ..., i_m} \frac{\partial^m C^m}{\partial e_{i_1}^0 \partial e_{i_2}^0 \partial e_{i_m}^0} e_{i_1} e_{i_2} ... e_{i_m} + \text{terms of order } m+1 \& \text{higher.}$$

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 analogous 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.

\textsuperscript{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 one$^{22}$. 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
   \[ F(x_1, \ldots, x_n) = C(F_1(x_1), \ldots, F_n(x_n)) \]
   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 $C$.

---


$^{23}$ 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**
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.**

![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

$$F(x_1,\ldots,x_n) = C(F_1(x_1),\ldots,F_n(x_n))$$

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

$$\lambda_u(X_1,X_2) = \limsup_{u \downarrow 1} P(X_1 > F_1^{-1}(u) \mid X_2 > F_2^{-1}(u))$$

and

$$\lambda_L(X_1,X_2) = \limsup_{u \downarrow 0} P(X_1 \leq F_1^{-1}(u) \mid X_2 \leq F_2^{-1}(u)),$$

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 \( \Phi \) denote the distribution function of the standard normal distribution and \( \Phi^x \) the \( n \)-variate standard normal distribution function with correlation matrix \( R \). The \( n \)-dimensional Gaussian copula with correlation matrix \( R \) is given by
\[
C^\text{Gauss}_R(u_1, \ldots, u_n) = \Phi_R(\Phi^{-1}(u_1), \ldots, \Phi^{-1}(u_n)).
\]

3.2 If \( X_1, \ldots, X_n \) are multivariate normally distributed with correlation matrix \( R \), then their copula is \( C^\text{Gauss}_R \).

3.3 It is important to note that Gauss copulas are not suitable to model the tail of \( X \). Indeed, if the correlation \( R_{ij} \neq 1 \), then the tail dependencies between \( X_i \) and \( X_j \) are zero\(^{24}\).

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 \( \nu = \infty \) 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 \( \chi^2_{\nu} \)-distribution. Let \( t_{\nu,R}^n \) denote the distribution function of \( \sqrt{\nu/S} \cdot (Y_1, \ldots, Y_n) \) and \( t_{\nu,R} \), the distribution function of \( \sqrt{\nu/S} \cdot Y_i \), i.e., the equal margins of \( t_{\nu,R}^n \).

Then the t-copula with parameters \( \nu, R \) is given by
\[
C_{\nu,R}(u_1, \ldots, u_n) = C_{\nu,R}^t(t_{\nu,R}^{-1}(u_1), \ldots, t_{\nu,R}^{-1}(u_n))
\]

3.6 The tail dependencies for the copula \( C_{\nu,R} \) are
\[
\lambda_\nu(X_i, X_j) = \lambda_\nu(X_j, X_i) = 2 - 2t_{\nu+1}(\sqrt{\nu+1}/\sqrt{1-R_{ij}}).\]

3.7 In order to aggregate models for \( X_1, \ldots, X_n \) with a t-copula, we need an algorithm to generate independent samples \( (u_1, \ldots, u_n) \) of \( t_{\nu,R}^n \). A feasible algorithm is:
- Find the Cholesky 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 \( \chi^2_{\nu} \) independent of \( z_1, \ldots, z_n \).
- Set \( x = \sqrt{\nu/S} \cdot Az \).
- Set \( u_j = t_{\nu}(x_j), \ j = 1, \ldots, n \).

---


3.8 This algorithm to generate random samples of the t-copula is fast.

**Coomonotonic Copula:**

3.9 The coomonotonic 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 coomonotonic 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 is defined as the risk of loss resulting from inadequate or failed internal processes, people, systems or from external events.

A $\alpha$-quantile of a random variable $X$ is any value $x$ such that $\Pr(X \leq x) = \alpha$. 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 is the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood.

Also called non-diversifiable risk

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 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 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 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 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 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 is the risk of random fluctuations in either the frequency or severity of a contingent event.
Exposure Draft of the Proposed International Actuarial Note (IAN) 100 on Application of IFRS 17 Insurance Contracts

Attached (below) is an exposure draft (ED) of the International Actuarial Note (IAN) on Application of IFRS 17 Insurance Contracts. The ED has been drafted by the Education and Practice (E&P) Subcommittee of the Insurance Accounting Committee (IAC) of the International Actuarial Association (IAA). The IAN is educational, and is not intended to be authoritative.

We ask you to distribute this consultation document (also available under Publications / IANs on the IAA website) widely within your organization and to any other interested parties in your jurisdiction.

The official deadline for comments is 26 April 2019.

The preferred format for submitting comments is the comment template attached to the transmittal e-mail. If a mark-up of the ED is also submitted, we recommend using the comment feature liberally, giving reasons for proposing the change. Comments should be addressed to IAN100.comments@actuaries.org with IAN100 in the email header. Each comment should make it clear if it is a personal response or one representing a particular organization, standard-setter or other entity.

All comments will normally be posted to the IAA website identifying the commentators. However, in exceptional cases, in response to a request which the IAA Secretariat is satisfied is for a valid reason, comments may either be posted to the website anonymously or withheld from the website.

We ask for commentators particularly to consider the following questions:

1. Is the IAN clear and unambiguous? If not, how should it be changed?
2. Is the IAN sufficient and appropriate in dealing with the Chapter headings? If not, how should it be changed?
3. Is the IAN at the right level of detail? If not, how should it be changed?
4. Where guidance is still ambivalent (awaiting further interpretation of IFRS 17) is there preferred guidance?
5. Are there any other matters that should be included in this IAN?

We would encourage readers to perform a critical review of the exposure draft. IFRS 17 is a very complex document, and different interpretations are possible for certain items. The exposure draft attempts to discuss these varying interpretations in several places, but more subjects for this ambiguity may exist than are currently identified in this draft. We also ask reviewers to suggest topics and situations seen in multiple jurisdictions in applying IFRS 17 that the IAN may have overlooked, or where reviewers disagree with the IAN’s current description of an item.

Thank you in advance for your attention to this matter. The E&P and IAC look forward to the responses.

The E&P Subcommittee recognizes that, in many cases, member associations will be drafting their own detailed educational notes on IFRS 17. The intention of the attached IAN 100 is that it dovetails with such jurisdictional educational notes in giving comprehensive educational reference for actuaries working on the provision of support to work on accounts being prepared under IFRS 17.
Exposure draft of IAN 100

International Actuarial Note 100
Application of IFRS 17 Insurance Contracts

17 January 2019

This International Actuarial Note is an educational document. It serves to familiarize actuaries with approaches that might be taken to work relating to IFRS 17 Insurance Contracts and to demonstrate how the actuarial profession might approach the topic. It does not impose any obligation on any IAA Member Association or any individual actuary to promote or apply the practices described. It is not a definitive statement as to what constitutes generally accepted practice in the area under discussion and the language used is not directive.
An International Actuarial Note (IAN) is an educational document that provides information on current or emerging practices in relation to an international actuarial topic. It serves to familiarize actuaries with approaches that might be taken and to demonstrate how the actuarial profession might approach the topic. The major difference between an IAN and other IAA educational documents is that all IAA Member Associations must be invited to provide input to the IAN through a formal consultation process, which maximises the capacity to identify any material differences of opinion on the content of the IAN.

An IAN does not impose any obligation on any IAA Member Association or any individual actuary to promote or apply the practices described. It is not a definitive statement as to what constitutes generally accepted practice in the area under discussion and the language used is not directive.

An IAN may address a topic that is also addressed by an International Standard of Actuarial Practice (ISAP) issued by the IAA. In that case, the IAN will not conflict with the ISAP. The IAN does not seek to interpret the ISAP and it is not intended as a description of how an IAA Member Association might interpret the ISAP. Nor is it intended as a description of how an actuary might apply the ISAP or any actuarial standard based on the ISAP, though it might assist in that regard.

**Exposure Draft dated: 17 January 2019**
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INTRODUCTION

This IAN has been written to assist actuaries in complying with IFRS17 and ISAP 4, by offering practical examples of ways in which actuaries might implement the ISAP and IFRS17 in the course of their work. This IAN is organised into 4 sections and 15 self-standing chapters, discussing the main topics of IFRS 17. Each section has a brief introduction to the topics contained in that section. It is written as a series of Questions and Answers.

This IAN is based on the Standard issued in May 2017 and also reflects some of the discussions held at the February and May 2018 Transition Resource Group (TRG) meetings. In Chapter 12 (Transition) we have based the illustrative dates on an assumed date of initial application of 1 January 2022 as proposed by the IASB in November 2018. This document will be revised in the future to reflect any future changes to the standard by IASB and discussions held at future TRG meetings.

What are International Financial Reporting Standards?

International Financial Reporting Standards (IFRSs), as issued by the International Accounting Standards Board (IASB), are intended to serve as guidance for developing general purpose financial statements and other financial reporting on a globally accepted basis. General purpose financial statements are an important source of information for investors and other users to make economic decisions.

IFRSs are focused on general purpose financial statements of consolidated groups of enterprises but are equally applicable to single societies or companies, be they profit-oriented entities or not-for-profit organisations such as mutual insurance companies. Financial reports in compliance with IFRSs (IFRS-reports) may be prepared voluntarily or their provision may be required, e.g., by state or stock exchange regulations. To be able to make an explicit and unreserved statement of compliance with IFRSs, the financial report needs to comply with all requirements of the relevant IFRSs. The contents of a complete IFRS-report are determined in IAS 1.10.

Some IFRSs are generally applicable (e.g., IAS 1 and IAS 8), some refer to specific circumstances (e.g., IAS 27, IAS 34, IFRS 1, or IFRS 10) whilst others refer to specific subjects (e.g., IAS 19, IAS 37, IFRS 9, IFRS 15 or IFRS 17) and are accordingly of more or less relevance for specific activities within the preparation of an IFRS-report, but considering the need to be in compliance with all IFRSs as noted before.

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1 IFRSs refers to the ensemble composed by each individual International Financial Reporting Standard (IFRS), as issued by the IASB since 2001, and by each individual International Accounting Standard (IAS), as issued by IASB’s predecessor IASC before 2001, by each International Financial Reporting Interpretation Committee Interpretation (IFRIC), as issued by IFRIC, and by each individual Standard Interpretation Committee Interpretations (SIC), as issued by IFRIC’s predecessor SIC. All these terms are registered trademarks owned by the IFRS Foundation, owning as well the copyright of all IFRSs.

2 IASB, Preface to International Financial Reporting Standards (PRE), September 2010, PRE.6-7

3 PRE.15 and IAS 1.16
What is IFRS 17– Accounting for Insurance Contracts?

The project to develop authoritative guidance for accounting for insurance contracts in IFRS-reports began in 1997. After introducing an interim standard, IFRS 4, in 2002, applicable from 2004 onwards, which allowed a wide scope of accounting approaches to continue to be applied, IASB completed the project in 2017 by issuing IFRS 17 - Insurance Contracts. IFRS 17 may be applied from 2018 onwards under certain conditions and is to be applied for all periods commencing after 1 January 2021 at the latest.

IFRS 17 provides authoritative guidance whether or to what extent items are within the scope of IFRS 17 (subsequently referred to as “classification”) and about recognition, measurement, presentation and disclosure of items within the scope of IFRS 17. IFRS 17 covers insurance contracts, whether issued directly or acquired in the form of reinsurance contracts assumed by the entity. Rights and obligations of policyholders of direct insurance contracts are not within the scope of IFRS 17.

The scope of IFRS 17 refers mainly to insurance contracts, as defined in IFRS 17, as contracts transferring significant insurance risk, irrespective of the laws or regulation of the respective jurisdiction which might classify and regulate other contracts as insurance contracts. Special inclusions or exclusions of some forms of contracts which might meet the defining criteria are provided. Investment contracts with discretionary participation features are also covered by IFRS 17.

Recognition follows typical accounting practice but permits the recognition of future premiums in some cases, where they do not represent a current enforceable right of the entity. For that purpose, IFRS 17 introduces a concept referred to as contract boundary (see Chapter 2) describing whether a future non-enforceable premium might be anticipated or not in the liability determination.

How is the liability for an insurance contract determined?

The measurement under IFRS 17 requires the determination of a current value of the insurance contract, considering market perspectives for financial risks and the reporting entity’s perspective for all other risks, in IFRS 17 referred to as the Fulfilment Cash Flows. This current value is the basis of the measurement of the insurance contract and is to be disclosed. The disclosures include its conceptual parts, the unbiased estimate of the expected present value of future cash flows, which is adjusted for the time value of money and further adjustments applied for financial risks and non-financial risks.

At outset a Contractual Service Margin (CSM) is established to offset any gain, if any, at initial measurement - that is the value of premiums in excess of the value of obligations. This is then recognised as revenue over the period providing coverage. While there is no unit of account defined for the Fulfilment Cash Flows, the unit of account for the CSM are partitions of annual
cohorts, based on at least three different profitability categories, which are part of annual new business and form the unit of account of the CSM.

The described main approach of IFRS 17 is referred to in this IAN as General Measurement Approach (GMA). IFRS17 allows for a simplified alternative approach to be used for contracts of short coverage period (typically not more than 12 months), known as the Premium Allocation Approach (PAA). The PAA is similar to the unearned premium method in that the measurement of the liability for remaining coverage of short duration contracts might be simplified by distributing premiums over the coverage period in line with passage of time or in proportion to expected benefits. The PAA only applies to the part of the total measurement of the contract referred to as liability for remaining coverage, with the liability of incurred claims following the GMA.

Some special guidance applies for certain contracts whose benefits are determined based on indices or other underlying items like surplus (i.e., insurance contracts with direct participation features) sometimes referred to as the Variable Fee Approach (VFA). It includes a feature distributing the insurer's share in changes of financial risk and incurred events over the remaining coverage period of the contract.

Reinsurance ceded is measured using assumptions that are consistent with the ceded contract.

How do insurers present profit or loss statements when applying IFRS17?

The statement of financial performance (profit or loss) is expanded by a section for the insurance service result. This contains as insurance revenue any release of cash flows, except those from investment components, risk adjustments for non-financial risk and CSM from the liability for remaining coverage for the respective period as far as originally resulting from premiums. Actual benefits and expenses of the period, including changes in the liability for incurred claims, but excluding any investment component paid, are presented as insurance service expenses. Changes in the effect of discounting and any other effect of financial risk are presented as insurance finance revenue or insurance finance expenses in the financial result. There is an accounting policy choice to present the effect of changes of financial risk directly in equity (Other Comprehensive Income), potentially avoiding / reducing volatility in the statement of financial performance.

Which specific disclosure requirements are included in IFRS 17?

IFRS 17 includes requirements to disclose information about the amounts recognised in the IFRS-report, particularly requiring reconciliations of presented amounts, significant judgment in determining those figures, including disclosures of the applied interest rate curves and a quantification of the risk adjustment for non-financial risk, and the nature and extent of the risks from the covered contracts.
In applying IFRS 17 for the first time, the standard provides two alternative approaches for transition if the retrospective approach as required by IAS 8 is impracticable. These are a modified retrospective approach and a fair value approach.

There is not a separate chapter on Disclosure in this IAN. Rather, disclosure is discussed in various chapters as relevant.

References to IFRS 17

In this IAN the use of the phrase “Paragraph X” etc. is a reference to paragraphs in IFRS 17. Where paragraphs from other IASs / IFRSs are referenced (e.g., paragraph 28 of IFRS 13) then that International Standard is stated.

In conjunction with IFRS 17, the IASB has published illustrative examples to IFRS 17. The document contains 18 examples applying IFRS 17 to hypothetical situations. Paragraph numbers in the illustrative examples to IFRS 17 are prefixed “IE”.

Interpretations are issued from time to time by the IASB Interpretations Committee (IFRIC). At the time of drafting this IAN there are no interpretations relating to IFRS 17 but one or more could be issued in future.

In this IAN reference is sometimes made to “BC” paragraphs from the IASB “Basis for Conclusions” which accompanied IFRS 17 when it was published. Those paragraphs together with any staff papers issued for TRG meetings, which are also referred to in this IAN, should not be considered as authoritative guidance. Rather they may be considered as background or supportive material.

Materiality

Materiality, in an accounting sense, is a principle that essentially creates a boundary between issues that have an effect on the outcome in an accounting sense and those that have no discernable effect. Judgement is required in determining this boundary, which affects that scope and extent of actuarial analysis for the GMA.

The following comes from paragraph 2.4 of ISAP 1:

In case of omissions, understatements, or overstatements, the actuary should assess whether or not the effect is material. The threshold of materiality under which the work is being conducted should be determined by the actuary unless it is imposed by another party such as an auditor or the principal. When determining the threshold of materiality, the actuary should:

- Assess materiality from the point of view of the intended user(s), recognizing the purpose of the actuarial services; thus, an omission, understatement, or overstatement is material if the actuary expects it to affect significantly either the intended user’s decision-making or the intended user’s reasonable expectations;
Consider the actuarial services and the entity that is the subject of those actuarial services; and

Consult with the principal if necessary.

Proportionality

Proportionality, in an accounting sense, is a principle that determines that the appropriate weights are given to all influences on accounting measures. Again, actuarial judgement has a major influence.

Illustrative examples

In this IAN some examples are provided to help ease of understanding of the topic. It should be remembered that these examples are for illustrative purposes only and each case needs to be considered on its own merits.

Overview of the sections and chapters of this IAN for IFRS 17

Chapter 1 on Classification of Contracts and Contract Boundaries

This Chapter considers approaches to the classification required by IFRS 17, including the identification of contracts, the scope of IFRS 17 and contract boundaries. It refers to other IANs addressing further specific classifications.

Section A – The General Measurement Approach

Chapter 2 on Estimates of Future Cash Flows

This Chapter considers the requirements for determining the estimates of future cash flows whether they be to calculate liabilities for remaining coverage or liabilities for incurred claims. It discusses issues such as which cash flows would typically be included, how those cash flows might be estimated, how the term “current estimate” is defined or what does it mean to be unbiased. The Chapter also refers the reader to the IAA’s monographs on Current Estimates 4 and on Stochastic Modelling 5. This Chapter does not discuss the cash flows particular to contracts with participating features or other variable cash flows which are discussed in Chapter 8.

Chapter 3 on Discount Rates

This Chapter considers the time value of money in the measurement of future cash flows and financial risk. It discusses both the “Top Down” and “Bottom Up” approaches referred to in IFRS 17 for determining yield curves. The Chapter refers to the estimation of risk free rates, the decomposition of credit and liquidity risks, extrapolation of yield curves and investment related expenses. The roles of the discount rate in the measurement of cash flows varying with

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4 Measurement of Liabilities for Insurance Contracts: Current Estimates and Risk Margins
5 Stochastic Modelling – Theory and Reality from an Actuarial Perspective
underlying items, the determination of interest expense and the interest to be accreted on the CSM are also considered.

Chapter 4 on Risk Adjustment for Non-Financial Risks

This Chapter considers the criteria for, and measurement of, the risk adjustment for non-financial risk required as part of the General Measurement Approach under IFRS 17 including the purpose and general requirements of the risk adjustment, what risks would typically be covered and specific considerations in determining the risk adjustment. This note discusses how to reflect risk mitigation as risk mitigation in a pool, diversification, risk sharing, catastrophic and other infrequent events, qualitative risks considerations, use of different approaches by line of business, and general considerations in selecting and calibrating a risk adjustment approach. For detailed risk adjustment methods and how to apply them, reference is made to the IAA Monograph Risk Adjustments 6. This Chapter also covers high level disclosure requirements including confidence level disclosure, and issues around allocation of risk adjustments to a lower level.

Chapter 5 on Unit of Account

This chapter considers the appropriate level of aggregation when accounting for business under IFRS 17. Amongst other considerations this includes the determination of the unit of account and the setting of portfolios and groups to meet IFRS 17 needs.

Chapter 6 on Contractual Service Margin and Loss Component

This Chapter considers the requirement under IFRS 17 to set up a Contractual Service Margin (CSM) at outset for each group of insurance contracts, including how it should be determined, the subsequent measurement including the allocation of revenue to future periods in line with the provision of services and the treatment of the loss component for “onerous contracts”.

Section B – Variations to the GMA

Chapter 7 for Premium Allocation Approach

This Chapter considers the use of the Premium Allocation Approach (PAA) under IFRS 17 including the criteria to be met for an insurance contract to choose this method, the measurement approach and the differences between this approach and the General Measurement Approach. The Chapter focuses on the “liability for remaining coverage”. The measurement of the contract liability from the point of occurrence of an insured event includes the “liability for incurred claims” which follows the requirement of the General Measurement Approach discussed in other chapters.

6 Risk Adjustments under IFRS 17
Chapter 8 on Participation Features and Other Variable Cash Flows

This Chapter considers the recognition, measurement and presentation of participating features, particularly in the case of contracts with direct participation features, as well as for other cash flows subject to the discretion of the insurer or linked to indices, including the criteria to be met for those classifications.

Chapter 9 on Reinsurance

This Chapter considers the treatment of reinsurance, both held (ceded) and assumed, under IFRS 17; including how to determine if IFRS 17 is applicable to specific reinsurance transactions. It discusses issues related to the separate presentation and valuation of the reinsurance ceded from associated underlying (ceded) contracts, and considerations in determining the estimate of future cash flows, risk adjustments and CSM and allowance for counter party risk on reinsurance ceded. Similar issues are covered for reinsurance assumed.

Section C – Uses of fair value measurement in IFRS 17

Chapter 10 on Fair Value Measurement

This Chapter considers the use of the fair value measurement of insurance contracts for IFRS 17 including for business combinations or portfolio transfers and on transition if the fair value approach is chosen.

It discusses the determination of the fair value of insurance contracts in the context of the more general guidance on fair value measurement found in IFRS 13 Fair Value Measurement and of common insurance industry practices.

Chapter 11 on Business Combinations and Portfolio Transfers

This Chapter considers the requirements under IFRS 17 when accounting for insurance contracts or liabilities for incurred claims acquired in a business combination or a portfolio transfer, and in particular the need to use the fair value of the contracts as the initial consideration. This Chapter considers the interaction between IFRS 17 and the more general guidance found in IFRS 3 Business Combinations and discusses aspects of business combinations, such as the determination of goodwill and the recognition of intangible assets.

Chapter 12 – Transition

This Chapter considers the one-time event of presenting statements applying IFRS 17 for the first time. It has four sections: an overview and then a section for each of the three transition methods described in IFRS 17 – the retrospective approach of IAS 8 and the alternative approaches introduced by IFRS 17, Modified Retrospective and Fair Value. The Chapter has a sample timeline. It also references content from Chapter 15 on Fair Value Measurement.

Section D – other IFRS 17 topics

Chapter 13 on Embedded Derivatives
This Chapter considers the requirements under IFRS 17 for the separation of certain derivatives embedded in contracts subject to the scope of IFRS 17. This Chapter discusses the issues which may arise in detecting and identifying embedded derivatives in such contracts which may need to be separated. Further information about embedded derivatives based on other IFRSs is found in the existing IAN 10 Embedded Derivatives.

Chapter 14 on Contract Modifications

This Chapter considers the treatment under IFRS 17 of contract modification to insurance contracts, including reinsurance contracts, de-recognition and transfer to third parties. It discusses what constitutes a contract modification and what can be simply treated as a change in estimate.

The Chapter describes approaches for determining the deemed premium when treated as a cancellation and replacement of the original contract as well as the application under the PAA. The approaches applicable to future contractual cash flows to be considered due to a prior contract boundary are also outlined.

It also discusses when and how contracts can be derecognised.

Chapter 15 on Measurement, Presentation and Disclosures

This Chapter considers the general requirements for presentation of financial information under IFRS contained in IAS 1 as well as the specific additional requirements in IFRS 17. It also provides general comments on the disclosures required to explain the presentation such as the required reconciliations. Additionally, this Chapter discusses the additional requirements of IFRS 17, including what constitutes revenue and expenses, how experience variances are presented, what is to be reported in the Statement of Financial Performance versus Other Comprehensive Income, the level of aggregation to be used in presentation and disclosure, and required reconciliations.
Chapter 1 – Classification of Contracts

Before consulting this chapter, be sure to read the Introduction to this IAN, particularly the sections on References to IFRS 17, Materiality and Proportionality.

1 A. What does this chapter address?

This Chapter considers the scope of IFRS 17, the identification and boundary of insurance contracts, separation of components and combination contracts and level of aggregation under IFRS 17 and contract boundaries. It refers to other IANs addressing further specific classifications.

1.B. Which sections of IFRS 17 address this topic?

Paragraphs 2-25, 34-35, 62, 72-74, Appendix A, paragraphs B3-5, B7-18, B24-27, B31-32 & B61, B64, C10, C21 & C23 provide guidance on this topic.


1.C. What other IAA documents are relevant to this topic?

None
Scope of IFRS 17

1.1. Which contracts are covered under IFRS 17?

Paragraph 3 states that the contracts within the scope of the standard are:

a) Insurance contracts (including reinsurance contracts) an entity issues;

b) Reinsurance contracts an entity holds;

c) Investment contracts with discretionary participation features any entity issues, provided the entity also issues insurance contracts.

The definition of an insurance contract is the same as under IFRS 4 and can be found in appendix A of IFRS 17.

“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 contracts held by an entity (i.e., as a policyholder), which are not reinsurance contracts held, are not, however, within the scope of IFRS 17 (see paragraph 7(g)).

While IFRS 4 used the phrase “financial instruments with discretionary participation features”, IFRS 17 refers instead to “Investment contracts with discretionary participation features”. The definition of this term in Appendix A refers in turn to “financial instruments” and so is very similar to that used in IFRS 4.

Appendix A defines an “Investment contracts with discretionary participation features” as

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:

(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; and

(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

1.2. What is the definition of an insurance risk under IFRS 17?

As noted in 1.1 above, Appendix A of IFRS 17 defines an insurance contract in terms of acceptance of “significant insurance risk”.
Insurance risk is defined in Appendix A of IFRS 17 as “risk, other than financial risk, transferred from the holder of the contract to the issuer”.

Paragraphs B7 to B16 provide guidance on what is insurance risk when applying this definition.

Financial risk as defined in Appendix A of IFRS 17, includes non-financial variables, provided they are not specific to the insurer or policyholder. Paragraph B8 explains this and provides examples.

Even if a financial variable is used in determining the size of a payment, if the payment is significant and dependent upon the occurrence of an insured event, then the contract is an insurance contract (see paragraph B10). An example of this is an index-linked life insurance cover, where the insured death benefit is the difference between the value of the units and the specified death benefit.

An insured event is defined in Appendix A of IFRS 17 as “An uncertain future event covered by an insurance contract that creates insurance risk.”

Paragraphs B3 to B5 provide guidance on what “an uncertain future event” is when applying this definition.

The uncertainty can relate to one or more of the probability, timing or size of the event. Hence, it includes cases where the event has already occurred, but the timing or size of the compensation remains uncertain.

The insurance risk must have an adverse effect on the policyholder and is transferred to the insurer by the insurance contract. Therefore, the policyholder should be already exposed to this risk before the insurance contract is created (see paragraph B11). Lapse, persistency and contract expense risks arising from a contract are for the reasons above not insurance risks.

A contract issued to an entity that covers risks such as lapse, persistency or contract expenses on that entity’s existing portfolio is likely to meet the definition of an insurance contract for the issuer since the entity is the policyholder. Further, if the entity’s existing portfolio includes insurance contracts, not just investment contracts, then such a contract is also likely to qualify as reinsurance held, for the holder of the contract. If there are no insurance policies in the portfolio, the contract does not fall under IFRS 17 for the entity (see paragraphs B14 and B15).

This adverse effect of the uncertain event on the policyholder is a necessary contractual precondition for a contract to meet the definition of an insurance contract. Note this does not require the insurer to investigate if an adverse effect occurred, but just to have the ability to deny compensation if such adverse effect does not exist (see paragraph B13).
The compensation can be a payment in kind by providing goods or services (see question 1.4).

1.3. What is the definition of significant insurance risk?

An insurance contract is only in scope of IFRS 17 if it transfers a significant amount of insurance risk to the entity (or reinsurer).

Insurance risk is only significant if there is at least one scenario with commercial substance where the compensation paid by the insurer is significant, disregarding the likelihood of that scenario. If commercial substance exists only in very unlikely scenarios, but the contract covers all these scenarios, then this qualifies as being significant (see paragraph B18).

Insurance risk can already be significant even if the policyholder still has to opt for insurance cover in the future, but with insurance rates already specified. Also, an insurance contract remains an insurance contract even if the original insurance risk has expired (unless a specified contract modification has occurred (see paragraphs 72 & 74-77).

IFRS 17 requires that the compensation and its commercial substance be considered on a present value basis, unlike IFRS 4, which did not require the use of present values in making this assessment.

1.4. What are examples of contracts that are covered under IFRS 17?

Paragraph B26 gives a list of examples. Most of the items on the list were also on the one in IFRS 4.

Some contracts may not fall under IFRS 17, even though they involve significant transfer of insurance risk. For example:

- Product warranties may otherwise qualify as insurance contracts, but not when issued directly by the manufacturer. These fall under IFRS 15 or IAS 37.

- Life-contingent annuities and pensions may otherwise qualify as insurance contracts, but not when accounted for as part of employers’ liabilities from an employee benefits plan or retirement plan. These fall under IAS 19 or IAS 26.

In addition, for some contracts that meet the definition of an insurance contract, but whose primary goal is to provide services for a fixed fee, paragraph 8 gives entities the option to choose between IFRS 17 and IFRS 15, if the contract meets all of the following criteria:

- 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; and
• the 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.

An example of this type of contract could be roadside assistance.

1.5. What are examples of contracts that are not covered under IFRS 17?

Paragraph 7 sets out contracts that are specifically excluded from the scope of IFRS 17 even if they meet the definition of an insurance contract. This list is similar to the one in IFRS 4; however, it also now explicitly excludes residual value guarantees provided by a manufacturer, dealer or retailer.

In addition, under paragraph 7(i), although financial guarantee contracts remain excluded from the scope of IFRS 17, it now allows an entity that has previously regarded such contracts as insurance contracts and applied insurance accounting on them, the option to use IFRS 17 for such contracts. Otherwise the IFRS relating to Financial Instruments apply (IFRS 7, 9 and 32).

Paragraph B27 provides examples of contracts that do not qualify as insurance contracts. These are unchanged from IFRS 4, although in some cases they have been expanded upon.

The following schematic helps understanding which contracts fall under IFRS 17 or elsewhere.

1.6. Where does the scope of IFRS17 differ from IFRS 4?

The examples in questions 1.4 and 1.5 already include a comparison with IFRS 4.

Under paragraph 3, investment contracts with discretionary participation features are only in scope if the entity also issues insurance contracts. This additional condition was not in IFRS 4. BC85 explains the rationale for this is that for the few entities that issue investment contracts with discretionary participation benefits, but not insurance contracts, the costs of implementing IFRS 17 would outweigh the benefits.
Separation of components from a contract

1.7. When might components of a contract be valued separately?

IFRS 17 distinguishes between insurance components, embedded derivatives, investment components and service components (see paragraphs 10-13).

Embedded derivatives are to be separated following the rules of IFRS 9. Derivatives that can be contractually transferred independently, or have another counterparty, are not embedded, but separate contracts.

Investment components are to be separated if and only if they are distinct, which means that both of the following conditions are met (paragraphs B31 and B32):

- The investment component is not highly interrelated with the insurance component; this means both that the entity is able to measure each component without considering the other components and policyholders can benefit from each component even if the other is not present (e.g., each component can lapse independently).
- The investment component appears after some reasonable research to be, or could be, sold separately in the same market or jurisdiction.

This means for instance that components that necessarily expire together (in case of a death or lapse/cancellation) or that are available in other markets but could not be provided separately in the own market, in general would not be separated.

Service components are to be separated in line with paragraph 7 of IFRS 15, but only after satisfying the requirements of paragraphs B33-35, in which case they are measured under IFRS 15, as modified by paragraph 12 of IFRS 17. To separate service components, fulfilment cash inflows and outflows need to be attributed to either the insurance or service component, with a rational allocation for those cash flows that are not uniquely related to either of these two (see paragraph 12).

1.8. What are examples of components that are currently often separated, but can no longer be separated under IFRS 17?

Insurers have currently often different components, such as claims liabilities to be settled, unearned premiums, receivables/payables, etc managed separately and administered in different systems. IFRS 17 leads to insurance receivables, policy loans and reinsurance collateral (funds withheld) no longer being separately visible on the balance sheet.

BC114 gives policy loans, assuming that they are a contractual feature, as an explicit example of a component highly interrelated with the rest of the contract and therefore not separable in a non-arbitrary way.
Contract boundary

The contract boundary distinguishes future cash flows to be considered in the measurement of the insurance contract from other future cash flows, even if they are expected to be paid under the same contract (see paragraphs 34 and B61). The contract boundary determines where a contract ends for measurement purposes, for a reporting period.

1.9. What is the definition of a contract boundary under IFRS 17?

Paragraph 34 defines the boundary of a contract for IFRS 17 measurement purposes.

“Cash flows under IFRS 17 are within the boundary of a 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 services.”

1.10. What are “Substantive rights and obligations”? 

Paragraph 2 makes it clear that:

- rights and obligations arise from contract, law, or regulation; and
- enforceability of rights and obligations is a matter of law.

It applies the term “substantive” to identify when future cash flows arising from those rights and obligations can be recognised as assets or liabilities. Accordingly, all clear cases of present enforceable rights or present enforceable obligations, as discussed in BC160, are within the contract boundary, if they are substantive. Any terms that have no economic substance are disregarded.

According to paragraph 34, substantive rights and obligations “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 services”.

Cases where no party has any right may be outside the contract boundary (see BC160 (a)). This is particularly the case if both parties have an unlimited cancellation right or no party has a renewal right.

If the policyholder, cannot be forced to pay the premium, e.g., if the policyholder is not obliged to renew a contract with an agreed upon duration, there is no substantive right of the entity to premiums after the agreed duration.

A substantive obligation could be present in cases where the applicable terms and conditions can cause future cash flows, compared with alternative cash flows within the contract boundary or premium component, to be onerous without the insurer having the ability to avoid such losses due to the absence of any cancellation or premium or benefit
adjustment right. In that case, the guidance of paragraph 34 is likely to require that the loss is anticipated.

For example, in the case of a contractual clause that the funds of the contract might be used to purchase an annuity where the assumptions regarding longevity could be adjusted to represent the individual longevity risk, but not beyond that, the annuity is normally not within the contract boundary. If the terms and conditions determine a contractually fixed annuitisation rate, however, then the entity is likely to be subject to a substantive obligation and the loss-making annuitisation of the funds might be anticipated, considering the likelihood that the annuity will be elected. That might also apply in cases where a premium component, with a unilateral right of the policyholder to pay the premium in future, includes minimum financial guarantees that are in the money at the reporting date and the adjustment clauses would not allow the entity to avoid that loss if the policyholder decides to pay the premium.

Paragraphs 34 (a) and (b) describe two alternative cases of when a substantive obligation ends. Accordingly, to show that a future contractual cash flow is not a substantive obligation, it is necessary to demonstrate that it arises from (or after) a period for which one of the following cases apply:

a) the entity has the practical ability to reassess the risk of a particular policyholder and can set a price accordingly; or

b) both of the following conditions are satisfied:

   i) The entity has the practical ability to reassess the risks at a portfolio level and can reset the price or level of benefits accordingly; and

   ii) The pricing of the premiums for coverage up to the date when the risks are reassessed does not take into account the risks that relate to future periods.

1.11. What does it mean to have the Practical Ability to reassess the risk?

The reference to the “practical ability” to reassess the risk is intended to differentiate from a pure formal legal right to do so, but where practical facts and circumstances actually prevent the entity from doing so. For example, it might be practically impossible to assess the risk due to any or all of the following:

- inaccessibility of the item bearing the risk;
- moral reasons;
- significant cost; or
- significant business dangers.
It is not the expectation that the entity does not intend to apply the reassessment but only the expectation that, even if it wishes to do so, it would not be able due to practical reasons.

Paragraph B64 notes that practicable ability exists if the entity can reprice the contract or portfolio (as applicable) to the same price it would charge for a new contract or portfolio with same characteristics. If an entity decides to charge a new price for new contracts, but for commercial reasons decides not to do so for existing contracts, then further judgment is required to assess whether this commercial decision was a free choice or refers to a practical inability to reprice. (see paper AP03 to May 18 TRG.)

1.12. What does it mean to reassess the risk of a particular policyholder?

When considering whether or not there is a substantive obligation, the entity may consider if there is any risk of anti-selection by the policyholder on the specific financial risk transfer. For instance, because of a possibly impaired risk profile it might be advantageous for the policyholder to continue the existing contract rather than effect a new contract. This advantage affects the substantive obligation of the entity to provide services.

The conditions outlined here might only be understood by considering the underlying risk for the ‘particular policyholder’ and cannot be assessed based on collective information. Therefore, under paragraph 34 (a) this can be interpreted to refer to risks transferred from the policyholder, insurance and financial risk only. The substance of the obligation results from guaranteed insurability or minimum guarantees on participation contracts.

1.13. What does it mean to reassess the risks at a portfolio level?

This is more than the ability to reflect general market experience, it requires the ability to reflect the experience of the portfolio itself. Again, the risks being reassessed are policyholder risks, transferred from the policyholder, e.g., insurance and financial risks not lapse and expense risks created by the contract even though they would be reflected in pricing (see paper AP02 to February 2018 TRG).

1.14. When does an obligation take into account the risks that relate to future periods?

The condition in paragraph 34(b) refers to substantive obligations arising from premiums already paid in the past even in the case of a collective premium or benefit adjustment clause. If there are none, as outlined in paragraph 34 (b) (ii), there is no substantive obligation in this case. This is typically the case if the entity charges premiums only to finance services in the premium payment period and the premium or benefit adjustment clause refers to future premiums financing the services in future periods entirely without support from already paid premiums. If the entity charged premiums in the past which included parts intentionally considered to finance coverage together with future premiums, those past premiums result in a substantive obligation of the entity, even if the future premiums are subject to a collective premium or benefit adjustment clause.

Paragraph 34(b) reflects two of the common types of premiums:
a) those which are often referred to as “yearly renewable” that only cover the risk arising in the next period e.g., one year (no substantive obligation); and

b) level premiums for the whole contract which in any one year might be greater or less than the cost of the risk for that next year with any excess premium being used to help “finance” the cost of risk in a later period (substantive obligation).

1.15. What is the consequence if a future cash outflow is outside the contract boundary, but not the originating premium?

This situation occurs if the future benefits are to be provided in the form of another service, e.g., an investment contract with an option to purchase an annuity with proceeds at maturity (see paragraph B24). In this case, the option to purchase an annuity, means the provision of an annuity is part of the contractual terms of the investment contract and it has significant insurance risk at inception. As noted in paragraph 24, however, if the contract as a whole is able to be repriced (as per paper AP03 to May 2018 TRG), which is the case here, when it becomes an annuity, and it is repriced to the then current terms for new entrants, then the annuity and associated provision of insurance coverage is outside the contract boundary. If terms of conversion to annuity are fixed at inception of the investment contract, the insurance coverage is within the boundary of the investment contract and the contract at inception, not just when annuity option is exercisable, is an insurance contract.

1.16. What are the issues for contract boundaries under reinsurance?

Paragraph 34 cannot be applied as it is, because in reinsurance held it is the entity who pays the premium (substantive obligation) and receives services (substantive right). In accordance with paragraph 4 (and TRG paper 3 of February 2018 and paper 4 of May 2018), the reading of this paragraph needs to be adapted appropriately to the context of reinsurance held. The contract boundary is then, the earlier of:

• when the reinsurer can reassess the services, thereby ending the substantive right of the holder of the reinsurance to receive the service; and

• the insurer is no longer compelled to pay a premium, thereby ending the substantive obligation.

When a direct insurance contract is being reinsured, differences in the boundaries of both contracts may occur, due to reinsurance and underlying insurance contracts having different dates of initial recognition. For example:

• A new reinsurance contract may cover insurance contracts that existed prior to the reinsurance contract coming into effect; or

• The scope of the reinsurance contract may extend to include future insurance contracts yet to be issued within the boundary of the reinsurance contract.
The February 2018 TRG meeting in its discussion of paper AP03, observed that expected future contracts could be within the boundary of the reinsurance contracts. Note, Paragraph 62 only requires that a proportionate reinsurance should not be recognised earlier than the initial recognition of any underlying contract and does not determine the boundary of the reinsurance contract.

Also, reinsurance contracts sometimes provide the reinsurer with cancellation options that are more flexible than in direct insurance and care is needed in assessing the boundary of such a reinsurance contract.

1.17. What are other boundary situations that need separate consideration?

Paragraph 35 states that expected future cash flows, which are not within the contract boundary, relate to future contracts. The standard does not make a distinction between the situation where such cash flows are highly interrelated with the existing contract, or not.

A typical situation is an insurance contract with a unit linked account and an insurance rider with the annual stepped rider premiums deducted from the unit linked account. As the units are repriced daily to market, they do not create a substantive obligation. If the rider premiums can be repriced at the portfolio level at annual renewal, then substantive obligation for insurance ends at annual renewal and boundary for the contract, as a whole, is the annual renewal date (see AP02 February 2018 TRG). In general, the cash flows arising from these future premiums are then considered as being outside the contract boundary.

Future insurance contracts

Under paragraph 35, future premiums, and the cash flows arising from them, would then relate to future contracts. Since contracts can be combined in groups issued no more than one year apart, this would mean that each set of annual premiums and associated cash flows would need to be treated as a separate contract under IFRS 17.

This has significant implications if the cash flows resulting from paid and future premiums are highly interrelated, for instance:

- Acquisition expenses for the contract as a whole; acquisition expenses are allocated to the initial contract created by premiums paid up to annual renewal, except to the extent they are dependent on renewal of the contract, e.g., acquisition commission subject to clawback if the contract is not renewed, can be allocated to the future contract created by the renewal (see AP04 February 2018 TRG). This could likely lead to an onerous “first” contract comprising the first premium only and to several very profitable contracts related to future premiums afterwards;

- In some instances, a rider cost may be funded from an investment component built by paid premiums. The risk premiums extracted from each “premium layer” contract will need to be reconsidered every time a new premium is paid.
Also, it may be technically possible that such “new” contracts are not in the scope of IFRS 17, e.g., right to insurance cover is not available in later years of the contract.

Paragraph 25 requires that the “new” contract is recognised at the earliest of:

(i) the beginning of coverage period;
(ii) the date of the first payment; and
(iii) the moment that the contract becomes onerous.

So, for a non-onerous contract, a new right or obligation could occur before the first related payment, and when treated as a new contract, the rights or obligation should then already be considered before the payment date.

1.18. When should a contract boundary be reassessed?

Paragraph 64 states that the boundary of a contract should be reassessed at the end of each reporting period, in order to include the effect of changes in the substantive rights and obligations of the entity.

It might be argued, in our example of future premiums being outside the current boundary of a contract, that any new premium paid could be seen as “crossing” the existing boundary and extending the new boundary by including the newly received premium and all related cash flows.

Aggregated levels of insurance contracts

IFRS 17 defines different levels at which insurance contracts can or should be aggregated.

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<tr>
<th>Portfolio</th>
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<tr>
<td>Group of contracts</td>
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<td>Combine contracts</td>
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<tr>
<td>Contract</td>
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In this section we discuss each of these levels.

1.19. When should contracts be combined for measurement purposes?
Paragraph 9 states that contracts may need to be combined and treated as a whole, in order to report their substance, if they have the same or related counterparty and as a set achieve, or are designed to achieve, an overall commercial effect. Paragraph 9 gives the example of two contracts that negate each other. This was discussed at the May 18 TRG, see paper AP01 and the TRG observed that:

- A single legal contract would generally be considered on its own to be single contract in substance, but there may be circumstances when a set of contracts are in substance one contract;

- Determining this requires careful judgement and consideration of all the relevant facts and circumstances, and no single factor is determinative in making this assessment;

- Considerations that might be relevant include:
  - Rights and obligations are different when looked at together compared to individually. For example, rights and obligations in one contract may negate those in another;
  - One contract cannot be measured without considering the other, e.g., the contracts are highly interrelated;

- An existence of a discount, of itself, does not mean that a set of contracts are designed to achieve an overall commercial effect.

If the assessment leads to the conclusion that paragraph 9 applies, then the contracts as a whole need to be combined.

1.20. What is the meaning of “portfolio of insurance contracts” in IFRS 17?

A portfolio comprises contracts subject to similar risks and managed together. Paragraph 14 also notes that contracts within a “product line” would be expected to have similar risks and hence be in the same portfolio if they are managed together.

1.21. What does it mean that “contracts have similar risks”?

In general, IFRS 17 and its Basis for Conclusions contain several sections related to this question. The relevant wording in paragraph 14 is as follows:

A portfolio comprises contracts subject to similar risks and 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 (for example single premium fixed annuities compared with regular term life assurance) would not be expected to have similar risks and hence would be expected to be in different portfolios. “If contracts cover similar risks and are within the same product line, they are subject to similar risks”
"Similar" does not mean "identical". Some variation in risk is reasonable, as long as the contracts are sufficiently similar. Since insurance is diverse and all portfolios are different, no prescriptive guidance can be provided on the correct level of materiality for the definition “of similar” and the decision process is likely to be entity specific.

Note that IFRS 17 discusses similar risks, which may not necessarily have the same interpretation as “similar insurance risks”. Therefore, an entity may consider other risks such as lapse and expense risk in their determination of what similar risks means.

1.22. What does “managed together” mean?

Again, there is no clear definition in IFRS 17 for this term. Hence judgement is required on what constitutes managed together.

From a practical perspective, the considerations relating to subject to similar risks noted above will require a level of granularity in assignment of portfolios that, in many cases, could result in portfolios that are naturally managed together.

It is expected that the determination of the portfolio level will vary between entities, due to different sizes and complexity, as well as the different ways in which business is managed. A practical approach to determining the portfolios for an entity might rely on the internal management reporting systems. For example, an entity’s internal management systems may consolidate results into product lines. These product lines could provide a suitable aggregation of similar risks; furthermore, an entity may have its systems aligned with its internal management structure and may disclose to the market on that basis. This might constitute a suitable aggregation basis for what is considered as ‘managed together’.

Other factors to consider against the test of managed together could, amongst others, include:

- distribution channel(s) that the contracts are sold through;
- the level at which regulation takes place, for example Compulsory Third Party insurance in Australia;
- capital allocation basis; and
- the operating model or management structure of the entity, including how management incentives are structured.

Product line groupings as prescribed by prudential regulators may not necessarily be appropriate to define portfolios due to a different focus in IFRS 17. The latter’s primary focus is about reporting appropriate profits and losses (BC119) rather than solvency focus of prudential regulators.
Note that an entity may change how it manages its business over time. As a result, the number of portfolios may change over time. This is an anticipated response under IFRS 17, although it does not necessarily affect the number of groups as historical groups do not change and groups are a sub-set of the portfolios.

1.23. What are the potential impacts of an entity’s choice of portfolio?

The definition of portfolio has an impact on:

- further grouping of contracts, which can only be done within a portfolio;
- the level at which entities can make an accounting policy choice determination to reflect all insurance finance income or expenses in profit or loss or disaggregate it between profit or loss and other comprehensive income. This comes from the fact that the IASB assumes that each portfolio has its own portfolio of assets backing the insurance contracts (see BC42 to 44).
- Expenses included in measurement as they need to be directly attributable at portfolio level (see paragraphs B65(e) & B66(d)).

It is important to remember, however, that the significance of insurance risk should not be considered at portfolio level, but still in relation to individual contracts (see paragraph B22 and BC 79).

Groups of contracts

1.24. What are the requirements for contracts in the same portfolio to be grouped together in a group of insurance contracts?

Please see Chapter 5 where this is discussed.

1.25. What if cash flows are measured at a higher level than the group of contracts or portfolio?

Please see Chapter 2 where this is discussed.
Section A – Introduction to the General Measurement Approach

This section includes five chapters that cover the technical aspects of the General Measurement Approach (GMA).

These areas are:

- Estimates of Future Cash Flows (chapter 2);
- Discount Rates (chapter 3);
- Risk Adjustment (Chapter 4);
- Contractual Service Margin (Chapter 6).

There is an additional explanatory section on Levels of Aggregation of Contracts for the use of the GMA (Chapter 5).

When considered together these are often referred to as the “Building Block Approach” as shown below:

1. Unbiased estimate of future cash flows
   - The estimates of cash flows used to determine the cash inflows and outflows relevant to the fulfilment of the insurance contract. These estimates should be explicit, unbiased and probability-weighted.

2. Discounted to balance date
   - At “risk free” plus illiquidity adjustment for most contracts, the discount rate reflects the characteristics of the insurance liability and is consistent with relevant observable market inputs for each reporting period.

3. Add risk adjustment
   - An adjustment to reflect uncertainty in future cash flows relating to non-financial risk.

4. Allow for profit/loss effect
   - CSM eliminates the recognition of any future accounting profit at inception. CSM cannot be negative (i.e. the present value of any onerous contract must be charged immediately to losses). CSM is spread over the remaining coverage period.
What are the building blocks that make up the General Measurement Approach?

Paragraphs 29-52 provide guidance on this topic. BC 18-26 and BC 36-119 also provide background on the GMA.

The IAA has published a paper on Current Estimates (Measurement of Liabilities for Insurance Contracts: Current Estimates and Risk Margins) – see, in particular, Chapter 2, and monographs on Discount Rates (see Chapter 3) and on stochastic methods that may be useful for this purpose. More recently, a monograph on Risk Adjustment was released in May 2018 (see Chapter 4). In general, we do not repeat material from any of the monographs in this IAN. In addition, the general educational material of IAA members provides significant educational material on the different ways to estimate future cash flows. All of this educational material may be relevant.

The following paragraphs provide educational material on the use of the various “building blocks” that make up the GMA in measuring a group of insurance contracts on initial recognition, and subsequent measurement. There then follow five chapters providing more in-depth educational material on individual aspects of the measurement model in greater detail.

Given the principle-based nature of IFRS 17, there is potential for differing interpretations of the various building blocks. Consequently, it is possible that comparison between reporting entities may reveal inconsistencies. Further, definition of the various building blocks may include either “overlapping” (or double-counting) of various aspects of the building blocks, or “gaps” (or omissions of certain elements). The scope of the actuary’s assignment may include responsibility to ensure that the building blocks are appropriately constructed, and that no such overlaps or gaps occur. Some examples of potential situations for differing interpretations follow:

a) In defining the “estimates of future cash flows”, IFRS 17 refers to “the expected value (i.e., the probability-weighted mean) of the full range of possible outcomes” (Paragraph 33). However, in the Basis for Conclusions for IFRS 17, the reporting entity is led towards use of “all reasonable and supportable information available without undue cost or effort about the future cash flows” (BC 18).

In practice, therefore, judgement will be needed, particularly in the incorporation of the extremes of the potential distribution of outcomes. For instance, estimates of certain extreme outcomes may not be supportable, and may need to be included by way of a subjective adjustment. Even if it is judged that such an adjustment would not be material to the expected value of the future cash flows, the impact on the risk adjustment may still be material.

b) In defining an adjustment for the “time value of money”, IFRS 17 incorporates the need to allow for “the financial risks associated with the future cash flows” (BC 19), hence arriving
at a risk-adjusted rate of discount. However, it also recognises that certain insurance contracts may combine financial and non-financial risks in such a way that “those components are interrelated” (BC 18). Hence, there is potential for the adjustment for the time value of money to exclude financial risk adjustment.

Judgement is needed in setting the barriers between the risks to be included in the discount rate.

c) In defining the “risk adjustment for non-financial risk”, IFRS 17 does not separately define non-financial risk and effectively defines it by reference to “financial risk”, the definition of which leaves room for judgement (See Chapter 4 for background).

Again, this leaves room for judgement in setting the barrier between financial and non-financial risk.

d) The illiquidity risk may be included in the discount rate, or alternatively it can be allowed for as part of the risk margin (See Chapter 3 for background).

The risk culture of the entity may inform the constitution of the building blocks, including:

- The perceived boundary between reasonable and unreasonable (i.e., spurious) cash flow projection in relation to the insurance contracts;
- The pricing bases for insurance products;
- Treatment of any asset and liability mismatch allowance/reserve, since this can be represented in different ways; and
- The cash flows and risks within the boundary of the contract under IFRS 17 and those used for other purposes.
Chapter 2 – Estimates of Future Cash Flows

Before consulting this chapter, be sure to read the Introduction to this IAN, particularly the sections on References to IFRS 17, Materiality and Proportionality

2.A. What does this chapter address?

This chapter provides information concerning the estimates of future cash flows for use in measurement of liabilities and assets arising under contracts within the scope of International Financial Reporting Standard (IFRS) 17 Insurance Contracts. This applies both at issue of the contract and at subsequent measurements.

2.B. Which sections of IFRS 17 address this topic?

Paragraphs 33-35 and B36-B71 provide guidance on this topic.

BC 146-184 also provides background on the subject.

2.C. What other IAA documents are relevant to this topic?

The IAA has published monographs on Current Estimates (Measurement of Liabilities for Insurance Contracts: Current Estimates and Risk Margins) and on stochastic methods (Stochastic Modeling) that could be useful for this purpose. In general, we will not repeat material from either of these monographs in this chapter.

In addition, the general educational material of IAA members provides significant educational material on how to estimate future cash flows. All of this educational material could be relevant.
General Issues:

2.1. What are the requirements of IFRS 17 regarding the measurement of estimates of future cash flows?

Paragraph 33 includes the key characteristics of the measurement of estimates of future cash flows, namely they:

i. Include all future cash flows within the contract boundary

ii. Are the probability weighted mean of the full range of possible outcomes

iii. Are unbiased (i.e., they do not include the risk adjustment for non-financial risk),

iv. Reflect the perspective of the entity (except that estimates of market variables are consistent with observable market variables for those variables)

v. Are current

vi. Are explicit

In estimating future cash flows, the actuary may need to adjust the results to reflect the specifics of the entity for which the cash flows are being estimated. For example, different entities may have different underwriting or claim settlement practices that might affect the estimated future cash flows. While past experience may reflect the practices in effect at the time, if the entity has made changes to those practices, past experience may need to be adjusted for the changes.

2.2. What are the common types of cash flows to be included?

Cash flows referred to in IFRS 17 are primarily payments of cash exchanged between the parties under an insurance contract in accordance with the terms and conditions of the contract. The term “cash flow” can also be used as shorthand for other transfers of economic resources (cash flow equivalents) that are not settled in cash between the parties to the insurance contract. They may also include such items as administration costs, certain overheads (per B65), payments to third parties and non-cash transactions such as the provision of goods and services.

Some non-cash transactions may be subject to other IFRSs that determine the amount of transfer of resource caused by fulfilling the contracts in the respective period. Measurement of future cash flows accordingly includes the allocation or transfer of resources to those future periods under the applicable IFRS.

Future cash flows may refer to any component of the insurance contract that is covered by IFRS 17 excluding separated components. Cash flows do include components that might sometimes be seen as separate but are not separate under IFRS 17 (e.g., policy riders or policy loans). See chapter 1 Classification for additional discussion of this topic.

Paragraph B65 states:
"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."

(See chapter 1 Classification for more on contract boundaries).

These cash flows include, but are not limited to:

- Premiums;
- Payments to (or on behalf of) policyholders including
  - claims that have been reported but not yet paid;
  - Payments that depend on the performance of underlying assets;
  - Payments from embedded derivatives; and
  - Incurred claims that have not yet been reported;
- Payments on future claims on unexpired risks;
- An allocation of insurance acquisition costs;
- Claim handling costs;
- Costs the entity will incur for payments in kind;
- Policy administration and maintenance costs;
- Transaction-based costs such as premium taxes and levies;
- Taxes paid in a fiducial capacity to meet obligations of the policyholder;
- Potential cash inflows from recoveries;
- An allocation of fixed and variable overheads directly attributable to fulfilling insurance contracts.

Sometimes, it might be permissible (e.g., due to immateriality) to also consider cash flows exchanged between the parties under the contract not based on the actual payment date but based on a due date or the date when the triggering event incurs.

2.3. At what level are cash flows determined?

Cash flows are generally identified at the individual contract level if possible (e.g., not for claims not reported). For measurement purposes, however, contracts are aggregated into portfolios and groups of contracts (chapter 5 on Unit of Account for more on this). IFRS 17 allows, moreover, the entity to estimate the cash flows at whatever level of aggregation is most appropriate from a practical perspective. If the entity makes estimates at a higher level, it needs to be able to allocate those estimates to groups of insurance contracts so
that the appropriate amounts are included in the measurement of the groups of insurance contracts’ fulfillment cash flows for remaining coverage and incurred claims.

Assumptions may be derived at aggregation levels that are different from the aggregation level applied for measuring contracts. In that case, judgement will be needed to determine what adjustment, if any, is needed to apply them at the required aggregation level. For example, maintenance expenses may be determined for all life insurance contracts, but separate assumptions may be needed for term insurance and whole life contracts.

In some cases, particularly for general insurance contracts covering multiple risks and/or perils, it may be helpful to analyse the experience separately for each of those multiple coverages. Such separation, for analysis and projection purposes, is particularly appropriate where the balance of coverages varies from contract to contract within a line of business, such as small business package policies. Such coverage cash flows may then be combined at the contract level (if practical and useful) before contract cash flows are aggregated into groups and portfolios for measurement purposes. Similar concerns will also apply to life insurance contracts with multiple risks (e.g., mortality and disability) or groups of insurance contracts with multiple durations (e.g., 10, 20 and 30-year term in the same group of insurance contracts).

In summary, BC117 states: “IFRS 17 allows an entity to estimate the fulfilment cash flows at whatever level of aggregation is most appropriate from a practical perspective. All that is necessary is that the entity is able to allocate such estimates to groups of insurance contracts so that the resulting fulfilment cash flows of the group comply with requirements of IFRS 17.” Paragraph 24 gives effect to this.

Issues concerning the definition of cash flows to be included

2.4. What is a current estimate?

A current estimate at the report date is the entity’s estimate based on currently available information in a manner consistent with relevant accounting guidance. The term “current estimate” is used in this chapter as a short form for the “current unbiased estimate of the future cash flows”.

IFRS 17 defines the term “fulfilment cash flows” as including the risk adjustment for non-financial risk (herein shortened to “risk adjustment”) and the effect of discounting. This chapter, however, does not refer to issues regarding calculating present values but focuses on the identification of cash flows and estimating unbiased expected values of those cash flows.

2.5. What is the meaning of expected value?

For IFRS purposes, “expected value of cash flows” represents the mean of the (typically unknown) probability distribution of cash flows. In line with this mathematical concept, IFRS 17 requires that conceptually all scenarios are covered in determining the value of the
cash flows, including scenarios in the extreme tails of the distribution. Where the variability in future cash flows follows a symmetric distribution, actuaries may conclude that the impact and likelihood of favourable and unfavourable extreme scenarios not explicitly considered in a model may broadly offset each other; however, where the distribution of future cash flows is skewed it may be necessary to adjust the expected value to reflect extreme scenarios not allowed for in the model.

For example, the probability distributions of general insurance property claims tend to be positively skewed. The available data for similar products may not be sufficient to fully reflect the future impact of abnormally large claims. In these situations, it is often necessary to rely on other sources of data and judgement to adjust the models. This tends to increase the expected value to reflect these high-cost but low frequency events. Similarly, actuaries may consider it appropriate to take into account favourable extreme scenarios such as, for life insurance, a fall in mortality rates if an affordable cure for cancer is developed. All such adjustments would require judgement on the likely impact and probability of occurrence to adjust the modelled expected value.

The reference in IFRS 17 to scenarios is about the defining characteristic of the mean value of a distribution function rather than providing guidance regarding how to estimate the mean value. It does not require that all possible (or even any) scenarios be explicitly constructed nor is it expected that entities will develop stochastic models for all IFRS 17 reporting.

2.6. Does the distribution function of cash flows need to be determined?

Not necessarily. The accounting purpose is to derive a current unbiased estimate of the expected value of cash flows. There are a variety of approaches that can be used for this purpose and IFRS 17 does not provide any guidance regarding how the estimate is to be made. Any statistical or non-statistical approach applied in determining figures for an IFRS report needs to comply with general accounting requirements as outlined elsewhere in this chapter.

2.7. What does “unbiased” mean?

According to BC 148ff, unbiased estimates:

a) Capture information about the full range of possible outcomes,

b) Should not have an intention of attaining a particular outcome, or

c) Influencing a particular behavior

Therefore, an unbiased estimate does not include either conservatism or optimism.

2.8. How does the object for current estimates as intended by IFRS 17 differ from objectives used for other purposes?

IFRS 17 calls for an estimate of the statistical mean, rather than the statistical median or mode. Other descriptions, such as best estimate or best estimate plus a margin, used in
other accounting structures, may not be the same. Before using cash flows developed for other purposes, their fitness for reporting under IFRS 17 may need to be assessed.

2.9. How are cash flows that do not directly belong to the contract, but are contractual, distinguished from cash flows belonging to the entity in general?

Cash flows belonging to the contract are those that are specifically generated because the contract is in existence (e.g., benefits, commissions, direct administrative expense). Indirect administrative expense, including general overheads, are included only if they are directly attributable to fulfilling a portfolio of insurance contracts as per paragraphs B65(l) and B66(d). If they are not, they are general expenses of the entity not belonging to the contract and are thus not considered in estimates of future cash flows of the contracts.

IFRS 17 is silent with respect to techniques to be used for estimating cash flows, therefore no special techniques are required to determine these indirect expenses included in future cash flows. Methods used for pricing or other types of reporting might be usable for this purpose so long as the result meets the requirements of IFRS 17.

Any cash flows or costs of the entity related to other standards are not discussed in this chapter. When investment administration expenses are estimated, only expenses that are required by the contract are included, not the expenses of the actual investments of the entity. Under normal circumstances, investment expenses are not included in the estimate of future cash flows. An exception to this may apply when those investment expenses are required by the insurance contract.

2.10. To what extent do the estimates of future cash flows have to differentiate contracts with different characteristics (e.g., age, gender), and other known differences of contracts?

Statistical estimates are usually only differentiated for a limited number of characteristics of the item to be estimated and include the average effect of other characteristics. IFRS 17 does not require the entity to assess all characteristics of a contract that might be relevant to the outcome and establish estimates on that basis. Paragraph B37 does require consideration of “all reasonable and supportable information available at the reporting date without undue cost or effort.”

Accordingly, it is a matter of judgment as to what degree characteristics of individual contracts are considered in estimating future cash flows. It may be appropriate for individual contracts to be aggregated into groups of contracts that are not further distinguished. B37 does note, however, that “information available from an entity’s own information systems is considered to be available without undue cost or effort.”

Paragraph 17 may require identification of the fulfilment cash flows of an individual contract for the purposes of initial grouping. Accordingly, assumptions that are appropriate for that purpose would need to be chosen for each contract. It is necessary to determine the degree to which the assumptions are differentiated for the characteristics of individual contracts. The individual characteristics of each contract are only considered to the extent that the assumptions are differentiated on the basis of those characteristics.

The actuary may consider a wide range of factors in an internal experience analysis used for determining liabilities for remaining coverage and incurred claims. This consideration
is to determine whether it is appropriate to incorporate those factors explicitly into the analysis and whether it is appropriate to then incorporate them into the measurement. Factors need not be incorporated in the analysis unless there is reason to suppose that they can reasonably be collected and used by the insurer without undue cost and that they are likely to materially impact the measurement of the fulfilment cash flows of the groups of insurance contracts.

Many characteristics of contracts will not be available to the entity in any case. For other characteristics, even if known, the entity might not be able to assess their impact due to limited statistical data or the undue cost or effort to obtain them. Other characteristics of contracts will not be consistently available for all contracts and, as a consequence, may be ignored since they can only be averaged over other contracts. Other characteristics, which might be assessable at outset or are even assessed, might be ignored in pricing since the overall benefits from such a differentiation would not outweigh the cost of doing so. For example, certain medical examinations or adjusting information systems to differentiate a certain characteristic could be more expensive than the price effect. An entity might thus limit the differentiation of contract characteristics to a certain number that can reasonably be administratively and statistically managed.

Accordingly, for estimating the liability for remaining coverage, the differentiation of assumptions as applied to individual contracts might start with the differentiation used for pricing. Less differentiation than applied in pricing might, if applied to individual contracts, result in inconsistencies between premiums and the measurement of the related cash outflows, if the cash flows are based on averaged assumptions while the associated premiums are more differentiated. For example, a contract viewed in pricing as being riskier and accordingly having a higher premium, would be compared with an average risk and therefore would show a high CSM (unless offset by a higher risk adjustment) while a contract seen in pricing as less risky and accordingly having a lower premium would result in comparison with the average risk, resulting in a low CSM or even showing a contract as onerous.

There are exceptions to this principle. Paragraph BC135 (a) refers to an “intentional pricing strategy”. If the entity underprices certain contracts intentionally, e.g., to gain market share, by ignoring certain relevant and known characteristics of the contracts, it might have the same consequences as if the entity chooses to charge insufficient premiums. Accordingly, measurement considers those peculiarities of the respective contracts and differentiates assumptions on that basis. As a consequence, the premiums agreed for that contract might turn out to be insufficient to cover the value of the risk.

Furthermore, paragraph 20 allows an exception for grouping, where law or regulation constrains the use of specific characteristics for pricing (e.g., where pricing of annuities must be on a unisex or gender-neutral basis). In such cases, the insurer may include such contracts in the same group, but only if they would otherwise fall into a different group due solely to the regulatory pricing constraints. Note that this does not allow those specific characteristics to be ignored in the measurement process, only for grouping.

It is acceptable to allow for the average impact of considered characteristics for the contracts in a group, so that only the average impact of the characteristics is reflected in the measurement, provided that it reflects the true mix of such characteristics in the group.
If the composition of a group changes, however, it may be necessary to reassess the average impact, so that it continues to reflect the mix of characteristics in the group.

Inflows

2.11. What are the cash inflows to be considered?

All cash inflows arising under rights of the insurance contracts and relating to services provided within the contract boundary are considered. The primary inflow is, of course, premium. Investment income, other than that related to policy loans (see below), is not included since it is a cash inflow due to investments and not specifically related to the fulfilment of the contracts.

Other cash inflows considered include such items as salvage, subrogation, contract charges such as cost of insurance charges, and claw-backs of agent commissions originally paid related to the contract. The treatment of such recoveries is not specified in IFRS 17. Any actuarial estimates of such recoveries need to be consistent with their accounting treatment to avoid double counting or omission of these cash flows.

Cash inflows on insurance riders and future insurance options, such as disability premium waiver, hospitalisation, term insurance, guaranteed future insurance (including cash flows from the expected exercise of such guarantees) will also be included if they are related to services provided within the contract boundary. See chapter 1 for more on contract boundaries.

2.12. How are policy loans and repayments handled?

If policy loans are a component of the insurance contract (i.e., terms are guaranteed in the contract), loans and repayments of policy loans are part of fulfillment cash flows. If future policy loans are initiated within the contract boundary, expected future loans and repayments as well as interest accrued on outstanding loans are also a part of the fulfillment cash flows.

2.13. How are premiums prepaid with interest accretion treated?

Prepaid premiums are treated the same as premiums paid at their due date. They are part of the cash inflows and the frequency and effect of their occurrence is included as part of future cash flows. In some cases, there is an agreement that the insurer grants a rebate on prepaid premiums in the form of interest accreted. If this agreement is a component of the insurance contract and not separated as a distinct investment component, the rebate is considered in measurement and treated as an adjustment to premium as per paragraph B65(a).

IFRS 17 does not directly address the issue of recognition of prepaid premiums but does require that liabilities reflect paid premiums not premiums due. In the same way as insurance acquisition cash flows arising before recognising the group of insurance
contracts are an asset according to paragraph 27, liabilities arising from prepaid premiums might be recognised but not necessarily as part of the cash flows.

2.14. How are extra premiums paid for substandard risks included?

Extra premiums for substandard risks are treated identically to other premiums. It is, moreover, important that expectations for the related future benefits are estimated on the basis of the correspondingly higher risk, so as to be consistent with the extra premiums. Actuaries might also consider whether the statistical knowledge available about the higher risk provides an adequate basis from which to develop an appropriate estimate that deviates from the extra premium determined. Similar considerations apply for premium rebates for risks better than standard.

Outflows

2.15. What are examples of outflows included in future cash flows?

Benefit payments, directly related expenses and similar items are the important items included in cash outflows.

2.16. What kind of data is used to estimate future cash outflows?

Paragraph B41 requires assumptions to be based on information including, importantly, the entity's own experience to the extent it is available, supportable and credible. The results arising from this data may be adjusted if there is reason to believe that historical trends will not continue in the future or if other influences may affect them. If internal data is not available, either in whole or in part, then industry or other available data, e.g., population data, may be used as a basis for the assumptions. In general, an entity's experience will be analysed for this purpose using an internal experience study.

Paragraph 33 (a) and B37 set limits on the effort required to collect the statistical basis of determining the assumptions. In general, information used should be reasonable, supportable and obtainable without undue cost or effort. Information available from the insurer's own information system, e.g., internal experience studies, and other sources used for pricing is considered available without undue cost or effort.

2.17. How are available inputs from financial markets and from other external sources applied to cash flow estimates?

If, for example, a portfolio has new elements on which the entity has no or limited experience, external inputs, such as industry experience, might be used. Available inputs from financial markets and from other external sources may not, however, represent characteristics of the cash flows of a certain portfolio; if that is the case, the entity's estimate or an adjustment to financial market information may be needed. As the entity obtains sufficiently robust experience of its own, it may consider supplementing the external data with it or eventually substituting its own experience.
2.18. What methods are appropriate to estimate future cash flows that might be dependent on market variables?

Stochastic projections (see IAA monograph on Stochastic Modeling) are allowed but are not necessarily required. They are, though, more likely to be needed for skewed risks than risks with symmetrical distributions. Stochastic methods will more likely be used to develop estimates of a risk adjustment (see IAA Monograph: Risk Adjustments under IFRS 17) or interest rates dependent cash flows than the usual mean estimate of common benefits. IFRS 17 refers to using, but does not require, stochastic modelling regarding cash flows that are asset-return sensitive (paragraph B48) and also if cash flows reflect a series of interrelated options (see paragraph B39 and paragraph B28 of IFRS 13 about the extent of such modelling needed).

In most cases, interest assumptions for stochastic models will be “risk-neutral” rather than “real world”.

2.19. What needs to be considered in estimating policyholder behaviour (e.g., surrender rights, options to convert to other types of contracts if such an option exists in a contract e.g., between a term and whole life contract)?

The basis for the expected value is the entity’s estimate of future expected behavior (based on experience and judgement), not necessarily rational financial behaviour (see B62). Experience might cover only a very limited range of circumstances as incurred up to the present. Accordingly, for a wide variety of possible future circumstances, no past experience may be available. In filling that gap, the actuary may wish to consider whether the chosen assumptions have a significant effect on the outcome compared with the outcome resulting from assuming that the behavior would be in line with past experience even in changed circumstances. If the difference is relevant, the actuary may consider if and how the experience needs to be adjusted to reflect expected future conditions (paragraph B41(c)). Risks from such assumptions are to be considered in the risk adjustment to the extent they are non-financial risk, depending on the nature of the risk. The expected value considers both advantageous and disadvantageous behavior of policyholders.

One of the considerations when setting assumptions is the possible effects of policyholder anti-selection. In certain circumstances policyholder behavior will depend on financial assumptions. In such situations, it may be important that those policyholder behavior assumptions be consistent with the interest rate assumptions being used. This may be true whether or not a stochastic approach is used.

Internal Costs

2.20. What methods are appropriate to estimate expected future internally incurred costs?

Estimates of future management costs will usually make use of any forecasts the entity makes including budgets and business plans. Those future unit costs will usually anticipate
inflation. It is also appropriate to allow for expected future economies (or diseconomies) of scale, consistent with the likelihood of these scenarios and unbiased mean.

Future unit costs will also consider the likelihood of the entity being measured as a going concern. Unit costs may therefore need to reflect a reasonable development of future new business, if appropriate, in deriving an unbiased estimate of the mean.

2.21. How are administration costs that are paid or expected to be paid prior or subsequent to contractual due date handled?

The proper measurement is based on the expected actual payment date, not the due date, and allows for any consequences of early or late payment (e.g. pre-paid or annualised commissions, interest accreted, penalties charged). If it can be shown, however, that there is no material difference between the actual and due dates, the measurement could be based on due dates. Caution needs to be taken to ensure consistency with the accounting treatment, to avoid double counting or omission.

2.22. Which cash flows other than claims payments and contractual services may be considered?

The key guidance for differentiating cash flows other than claims payments and other contractual services is the exclusion of general overhead costs in paragraph B66 (d) if they “cannot be directly attributed to the portfolio of insurance contracts that contain the contract”. See B65(i), on the other hand, for examples of some overheads that are included in estimated future cash flows. Those general overhead costs are not included in the estimate of future cash flows of IFRS 17 and are accordingly subject to authoritative guidance in other IFRSs determining their recognition, measurement, presentation and disclosures. This Chapter does not discuss such items.

The reference to “directly attributable” is a generally used phrase in IFRSs and the entity might have previously adopted interpretations of that term in its accounting policies. This Chapter does not discuss further the accounting meaning of this phrase. The accounting interpretation of this phrase might, however, result in the need to choose the partition of the business into Portfolios of Insurance Contracts (PIC) suitably to allow an adequate split of currently incurred and future expected cost between those “directly attributable” to a PIC and general overhead that is not considered in measurement and presentation of insurance contracts.

After identifying those internal costs that can be directly attributed to portfolios of insurance contracts, those costs might be differentiated regarding their function in fulfilling the insurance contracts. IFRS 17 distinguishes insurance acquisition cash flows from other internal costs. IFRS 17 is silent regarding how to accomplish this separation, which might be seen as an indication that normal cost accounting approaches, particularly key allocations between functions are appropriate.
In summary, the identification of costs considered in measurement might be split in three separate steps:

1) Exclude costs that are not directly attributable to a portfolio of insurance contracts (B66 d)).

2) Allocate the remaining costs to functions, i.e., insurance acquisition cash flows, servicing contracts during their coverage period and settling claims based on normal cost accounting principles (B65 (e), (f), (h) and (l)).

3) Allocate the identified costs per function to each group of insurance contracts “using methods that are systematic and rational, and are consistently applied to all costs that have similar characteristics” (B65 (l)).

2.23. What are insurance acquisition cash flows?

Insurance acquisition cash flows are defined (see Appendix A of IFRS 17) as “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 group of insurance contracts within the portfolio.” These include direct payments, such as commissions, underwriting costs, and other costs of contract issue specific to a particular contract, but also include such costs incurred for a portfolio of contracts. They may not include allocation of some overhead expenses.

To differentiate acquisition costs from other costs, particularly contract administration costs, the contract boundary might be of relevance. If a payment is contingent on persistency beyond the contract boundary, it might be seen as an acquisition cost outside the contract boundary. Therefore, those costs are not included in the cash flows of the existing contract. In that case, the item is recognised as an expense only when the new contract becomes in force. If the payment is contingent only on persistency within the contract boundary it is generally an administration cost.

2.24. How are insurance acquisition cash flows considered if paid prior to initial recognition of the related group of insurance contracts?

Insurance acquisition cash flows incurred prior to initial recognition are reflected as paid and capitalised until the related group of insurance contracts is issued. An exception to this is for contracts using the PAA that have a duration of 12 months or less. Such contracts may choose to recognise acquisition costs as expenses when incurred (Paragraph 59).

2.25. How are insurance acquisition cash flows considered if paid in a reporting period (in the same year, in a subsequent year) after initial measurement (e.g., renewal commissions or asset-based commissions)?

Insurance acquisition cash flows incurred after the initial sale, are reflected in the same way as other future costs, regardless of the year in which they are paid. That is, they are included in the contract’s estimated future cash flows on a probabilistic basis. Therefore, for example, if the payment of the commission is dependent on the policy continuing within the contract boundary, the probability of lapsation is reflected.
In this sense, they are considered to be directly attributable expenses. The question of whether they are acquisition costs or direct administration costs is moot.

2.26. If agent / agency compensation is contingent upon agent / agency survival, how might those expenses be reflected (and if so, how might agent / agency turnover be considered)?

These expenses are usually included in estimated future cash flows in the same way as for other contingent cash flows, e.g. claim handling costs. Hence if agent / agency turnover materially affects expected cash flows, this needs to be considered in determining estimated future cash flows whether the expenses are for acquisition or maintenance of the contract.

2.27. What are some examples of expenses that are or are not insurance acquisition cash flows?

Insurance acquisition cash flows include, but are not limited to:

- Commissions to sales personnel
- Payments to managers of agencies or brokerages based on a percentage of commissions or other measurements of sales
- Underwriting costs
- Contract set up expenses

The following might not be considered insurance acquisition cash flows:

- Payments to managers of agencies or brokerages not based directly on sales
- Payments to managers of agencies or brokerages based on policy persistency
- Premium and commission processing costs

Other Cash Flow Issues

2.28. Are any taxes included in cash flows?

See B65. All transaction-based taxes (such as premium taxes, value added taxes and goods and services taxes) and levies (such as fire service levies and guarantee fund assessments) are included in cash flows. Wage based taxes, referred to as payroll taxes, social security taxes and similar items, are also included to the extent the wages they are based on are included. Also included would be any taxes paid on behalf of the policyholder. If the impact of certain of these taxes is only the small difference of the time value of the incoming and outgoing cash flows, those impacts could usually be ignored based on materiality considerations but noted in disclosures.

Income taxes and other similar taxes (e.g., a tax based on Investment Income and Expenses) levied on the entire entity are not included as a cash flow in contract measurement even if they are reflected in benefits paid to policyholders unless paid in a fiduciary capacity on behalf of the policyholder.
2.29. Are there any special considerations for discretionary or voluntary payments to policyholders?

For policyholder bonuses or dividends see chapter 8 on Contracts with Participating Features and Other Variable Features. Similar items on non-participating contracts (e.g., excess interest payments) will generally be measured in the same way they would be measured on a participating contract. For other discretionary cash flows of the entity, including any fair dealing in determining claims payable, whether their consequences are within or beyond the contract boundary needs to be considered. If they are with respect to services provided within the contract boundary, they may also be measured at the expected value. Otherwise, they are generally not included.

2.30. How are policyholder dividends or bonuses projected for traditional participating contracts?

See Chapter 8 on Contracts with Participating Features and Other Variable Features.

2.31. How are delayed benefits, benefits which are expected never to be paid, or events that create rights contingent on future events (e.g., annuities to persons under third party liability, or joint life) accounted for?

These benefits are normally included in the same way as other benefits, at their expected value. This may be different from previous accounting structures that, in some instances, measure such benefits only after they are elected.

2.32. How are interest credits paid to policyholders projected?

See Chapter 8 covering Contracts with Participating Features and Other Variable Features.

2.33. Where is there available guidance for estimating inflation and its effects on inflation-sensitive benefits, claims and expenses?

Paragraph B128 (b) provides guidance on when inflation risk is to be seen as non-financial risk. When seen as financial risk, paragraph B51 provides as an example a reference to observed market interest rates. A range of statistics is available in different countries. General living cost or wage indices might be useful for many cash flows, but building, medical and other insurance relevant expenses may also have their own indices or may be responsive to specific factors other than general inflation. In addition, as inflation applies to the entity's internal expenses, the relative change in productivity and changes in the number of units can also influence trends in unit expenses. As long as observations can be made regarding (neutral) expected values of inflation in market prices for the specific cash flow to be measured, those observations have priority compared with the entity's expectations.

2.34. How can cash flows on blocks of business with no prior experience or no relevant experience (e.g., new line of business for entity, mortality past age 90 or coverage durations longer than the product has been issued) be estimated?

The best available relevant experience, both any related internal experience and any available data from the industry, may be considered. This is likely to be supplemented by documented judgment.
2.35. How might cash flows on contracts covering multiple perils be developed?

This depends on the nature of the contract and the nature of the peril.

For example, many general insurance contracts cover standard combinations of perils. In such cases, the standard combination might be treated as a single peril.

If the perils are fully independent, then simple addition can be used; however, if the data for one peril is not sufficient for a reliable estimate, then estimating cash flows by peril may not be recommended.

Interdependent perils (e.g., joint life, first death) can be adjusted for the probabilities of co-incidence.

2.36. How might cash flows on a single contract with multiple insured items, particularly if there is an open number of insured items in the contract (e.g., a group life contract or a corporate auto contract) be adjusted for added or deducted insured items?

Where an additional premium is to be agreed for each additional insured item (e.g., group life, health or disability), estimates may be made on the basis of the insured items active at the measurement date, since the additional insured item is beyond the contract boundary before it is added.

Where a fixed premium is charged even if the number of insured items can change within the contract boundary, then an expected value approach is appropriate for estimating the number of insured items which will be covered within the contract boundary.

Changes in estimates

2.37. How often are estimates re-evaluated?

Estimates must be re-evaluated at every reporting date. In compliance with paragraph 33 (c) and B54-B60, the assumptions for estimating the cash flows also have to be re-evaluated at each reporting date. If there is no positive indication that anything relevant has changed, however, no change to an assumption is allowed.
Chapter 3 – Discount Rates

Before consulting this chapter, be sure to read the Introduction to this IAN, particularly the sections on References to IFRS 17, Materiality and Proportionality

3.A. What does this chapter address?

This chapter discusses practices related to interest rates, yield curves, discounting and replicating portfolios for insurance contracts as required by IFRS 17. First the general principles for discounting within IFRS 17 are discussed in questions 3.1-3.10. Discount rates used for cash flows that do not vary based on the returns on financial underlying items\(^8\) are discussed in questions 3.11–3.24. Discount rates for cash flows that do vary based on the returns on financial underlying items are discussed in questions 3.25-3.31. Discounting related to PAA is covered in questions 3.32-3.35 and locked-in discount rates are discussed in questions 3.36-3.41.

3.B. Which sections of IFRS 17 address this topic?

Paragraphs 36 and B72 – B85 provide guidance on this topic.

Related sections are paragraphs B44-B48 (on market variables) and paragraphs 87, 110-113 and B128-B136 (on insurance finance income and expenses).

BC 19, BC 185 – BC 205, and BC 212 also provides background on the subject.

3.C. What other IAA documents are relevant to this topic?


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\(^8\) The standard defines underlying items which might include both financial and non-financial elements. As only financial underlying items are relevant for the discount rate, only financial underlying items will be referred to in this section.
General topics

3.1. What are the general principles related to discounting within IFRS 17?

An amount payable today has a different present value from that of the same amount payable in the future. In other words, money has a time value. Discount rates are used to adjust cash flows to reflect the time value of money. The following general principles underpin the discounting guidance within IFRS 17.

Principle 1: Estimates of future cash flows are adjusted for the time value of money and the financial risks related to those cash flows, to the extent that the financial risks are not included in the estimates of cash flows (paragraph 36).

Principle 2: Discount rates are reflective of whether the cash flows vary based on the returns on any financial underlying items (paragraph B74).

- For some insurance contracts, e.g., most general insurance and non-participating traditional term life or non-participating whole life insurance, the cash flows are not dependent on financial underlying items. IFRS 17 refers to these products as having cash flows that do not vary based on the returns on any financial underlying items. The discounting for these cash flows is discussed in questions 3.11-3.26.

- Other insurance contracts, e.g., unit-linked universal life insurance and variable annuities, typically have cash flows that are dependent on financial underlying items. IFRS 17 refers to these products as having cash flows that vary based on the returns of any financial underlying items. The discounting for these cash flows is discussed in questions 3.25-3.31.

- Based on the definitions in the standard, the distinction between cash flows that do vary based on the returns on financial underlying items and cash flows that do not vary based on financial underlying items is not equal to the distinction between insurance contracts with direct participation features and insurance contracts without direct participation features. This is further explained in question 3.9.

Principle 3: The discount rates applied to the estimates of the future cash flows reflect the characteristics of the cash flows and the liquidity characteristics of the insurance contracts (see paragraph 36a).

- The discount rates applicable to fully liquid instruments (the “risk-free curve”) are discussed in question 3.12;

- The liquidity characteristics of insurance contracts are discussed in questions 3.14-3.17.
**Principle 4:** The discount rates are consistent with observable market prices, if any, for financial instruments with cash flows whose characteristics are consistent with those of the insurance contracts and they shall exclude the effect of factors that influence such observable market prices but do not affect the future cash flows of the insurance contracts (paragraphs 36b and 36c).

- The concept of a reference portfolio is discussed in question 3.12
- It may be possible to determine the discount rates for a portfolio of insurance contracts by identifying a replicating portfolio. This is discussed in question 3.29.

**Principle 5:** Assumptions for the estimates of discount rates are consistent with assumptions for other estimates used to measure insurance contracts to avoid double counting or omissions (paragraph B74). For example, if nominal cash flows include the effect of inflation they are discounted at rates that include the effect of inflation. Similarly, when discounting cash flows that vary with financial underlying items, the financial return assumptions used to estimate future cash flows and the discount rates used are aligned (see questions 3.25 and further)

### 3.2. For which purposes are discount rates required?

Paragraph B72 lists the purposes for which discount rates are required.

<table>
<thead>
<tr>
<th>An entity shall use the following discount rates in applying IFRS 17:</th>
<th>Discussed in questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) to measure the fulfilment cash flows – current discount rates applying paragraph 36.</td>
<td>3.11-3.31</td>
</tr>
<tr>
<td>b) to determine the interest to accrete on the contractual service margin [...] for insurance contracts without direct participation features – discount rates determined at the date of initial recognition [...].</td>
<td>3.36</td>
</tr>
<tr>
<td>c) to measure the changes to the contractual service margin [...] for insurance contracts without direct participation features – discount rates [...] determined on initial recognition.</td>
<td>3.37</td>
</tr>
<tr>
<td>d) for groups of contracts applying the premium allocation approach that have a significant financing component, to adjust the carrying amount of the liability for remaining coverage [...] – discount rate [...] determined on initial recognition.</td>
<td>3.33 &amp; 3.34</td>
</tr>
<tr>
<td>e) If an entity chooses to disaggregate insurance finance income or expenses between profit or loss and other comprehensive income (IFRS 17.88), to determine the amount of the insurance finance income or expenses included in profit or loss:</td>
<td></td>
</tr>
</tbody>
</table>
(i) 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 policyholders [...] – discount rates determined at the date of initial recognition [..];

(ii) 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 [...] – discount rates that allocate the remaining revised expected finance income or expense [...] at a constant rate; and

(iii) for groups of contracts applying the premium allocation approach [...] – discount rates determined at the date of the incurred claim [..].

3.3. How are liquid risk-free rates determined in the context of IFRS 17?

A liquid risk-free yield curve is discussed in paragraphs B80 and in BC193. It is the basis of the bottom-up approach which is discussed in question 3.13. The liquid risk-free curve may not be required in a purely top-down approach (which is discussed in question 3.18.)

IFRS 17 does not define a method to derive the liquid risk-free yield curve. Favourable characteristics for market quoted interest rates used in deriving a liquid risk-free yield curve might include those quoted interest rates:

- Being reliable and liquid;
- Containing no credit risk; and
- Having quoted / maturity dates for a wide range of terms/durations.

To set an entire curve, practitioners may, in some cases, consider using more than one security type or market index / reference rates to derive the overall curve. Thus, deriving the liquid risk-free curve may involve judgement.

Some options and considerations that might be applied are set out below9:

a. Government bond rates

Politically stable governments in economically developed countries are commonly believed to have a low probability of defaulting on their debts. This is because governments in such countries have taxing power and the ability to expand money supply (which is not the case for all governments). The rating of government bonds

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9 Other publications on the subject could help the practitioner to derive such a curve (for example: (EIOPA, 2017), (IAA, 2013)).
can be used as an indicator as to whether the bonds of the specific government may be considered risk free.

In the situation of a currency union, a basket of government bonds with a high rating might be used. In the situation of a currency union, an individual government does not have the ability to expand the money supply which may cause credit risk. Also national governments can issue debt. If credit risk is present, an approach that estimates the credit risk component so that it might be removed is described in question 3.19 below.

Apart from the credit risk, the available maturities and the liquidity of the government debt market varies between governments. These may be factors when choosing between government bonds and alternative bases for the risk-free curve development.

b. Swap Curve

In many markets swap curves are observable and available for a range of terms. In some cases, they are more liquid and available for a greater range of terms than government securities.

Swaps are often used as instrument for replicating and hedging interest rate risk arising from derivative assets which makes them a natural reference to derive risk-free interest rates. Furthermore, swap contracts are typically collateralised and there is no risk on the principal value associated with the swap agreement, which substantially reduces the exposure to losses associated with a credit default event. For example, the EIOPA Solvency II approach uses Swap Rates for currencies with deep financial markets.

Quoted swap rates may have to be adjusted in order to reflect:

- The counterparty credit risk: A party who is receiving a fixed interest rate (i.e., fixed / quoted leg) from another party is likely to require a premium on top of the interest rate to compensate for the risk related to future interest payments on the fixed leg in excess of the floating leg. The “swap rate” will include an allowance for credit risk and an adjustment would be required, taking into account collateralisation requirements.

- The underlying reference security credit risk: If swap rates are based on the yield of an underlying reference security with material credit risk premiums these risk premiums would need to be removed to obtain a risk-free rate.

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10 Note that the volatility adjustment is not compliant to IFRS 17.
Understanding the basis underlying quoted rates is important when choosing any adjustment in relation to counterparty risk. Similarly, understanding the underlying reference securities is important when choosing any adjustment for credit risk.

c. Corporate Bond Rates

Corporate bond rates are not risk free although in some jurisdictions, it may be the most widely traded market. Credit risks need to be considered in the context of corporate risks. Techniques that might be considered when using corporate bond rates are similar to those presented in question 3.19.

3.4. How can risk free rates be determined if there is no well-developed bond or swap market?

When, for a given currency, there is no well-developed bond or swap market other approaches may be considered. Two situations can be distinguished:

a. The local currency is pegged to another currency;

b. The local currency is not pegged to another currency.

The local currency is pegged to another currency

The suitability of this approach depends upon adequately allowing for any risks that the level of the peg may change. This risk causes a spread on rates in the local currency. Evaluating this risk may require particular care given that in these situations there may be a lack of forward exchange rate contracts which, if they were available, would be one source of a market observable measure of the risk of the peg changing. Observed deviations in the past from the pegging policy may be an indicator for a correction on the targeted difference.

The local currency is not pegged to another currency

Short nominal rates may be derived from the rate the central bank offers for deposits. For long durations, one might consider using a global real rate plus a compensation for the inflation the local central bank is targeting. The targeted inflation may be adjusted using expert judgement if for example the risk of higher inflation on the long run is considered realistic. Observed differences in the past between the targeted inflation and the realised inflation may be an indicator for the need of an adjustment. In the globalised economy differences between real rates in developed countries have declined. See graph below. However, it might be appropriate to consider whether that narrowing will remain. For the estimation of a global real rate, an option is to use a basket of high rated government bonds or swap rates. It is a matter of judgment how much weight is put to each country. One might use for example the GDP as a weight.

Local real rates may deviate from the global real rate if there is a strong demand for loans when a country is in a developing phase. An estimation of a difference between the local risk free real rate and the global risk free real rate in the long run is difficult. This is a matter
of judgement. Estimation of the inflation in the long run could be an even a bigger challenge. It comes largely down to expert judgement.

If quotes for forward exchange rate contracts are available, this information can be used to convert other risk-free rates in other currencies to the rate for the local currency.

3.5. How is inflation reflected in discount rates?

Paragraph B74 states that nominal cash flows (i.e., those that include the effect of inflation) shall be discounted at rates that include the effect of inflation. Real cash flows (i.e., those that exclude the effect of inflation) shall be discounted at rates that exclude the effect of inflation.

Cash flows subject to inflation may therefore either

(i) be projected including the effects of inflation and discounted with a nominal rate or
(ii) be projected without inflation and discounted with real rates.

There are several potential methods that may be suitable for deriving inflation and/or real interest rate expectations. Some potential methods and aspects to consider in their application are discussed below. The considerations listed may not be exhaustive.

- **Market based approaches**
  - Estimating inflation by taking the difference between nominal bond yields and inflation-linked bonds. This method requires limited judgement where the issuer / credit risk of the bonds is the same (otherwise judgement / subjectivity is involved in
making further adjustments for differences in yield due to credit risk). More considerations may be required because in some markets, while the nominal bond market is considered reliable and well-functioning, the index-linked bond yields may be biased because of smaller volumes on issue and other supply/demand factors. This would then bias the derived estimate of inflation.

- Inflation swaps/other market instruments – investment banks or other traders may offer contracts that provide exposure to future inflation. These may not be common, causing possible biases given limited availability. Where such trades occur, the prices may not be readily and publicly available. Nonetheless, where such information is available it may assist by providing insight into market information on inflation estimates.

- **Publicly available estimates**

  - Central bank targets for inflation.

  - Forecasts of economic commentators and/or government bodies.

  - Views of a long-term real risk-free rate. This is discussed further in question 3.21. This may assist with setting the long-term inflation estimate but is likely to be less helpful in setting short-term estimates.

Publicly available estimates may not be the same as the results of market-based approaches or may not align with realised inflation over time for the cash flows. If public estimates and market-based approaches are not similar over a given time horizon, then an evaluation of the causes of difference may be useful. The appropriate adjustments will be based on the cause of the differences.

Potential causes of differences may be as follows:

- The corresponding central banks may not always achieve their target which may extend to different economic expectations over the long run.

- Market based estimates can be biased due to limited volume of transactions available.

Some cash flows of an insurance contract may depend on a different inflation index to a commonly available index such as the consumer price index (CPI) and may be linked instead to salary inflation which, over time, is likely to differ from CPI. Or for example, the expenses of an insurance company may be expected to grow at a different pace than the CPI. Also, the insured amount may depend on an inflation index that is not equal to the CPI. If this is the case, the appropriate inflation expectation would need to be used in the measurement, or in accordance with paragraph B74d, where the inflation component is excluded from both the cash flows and the discount rate. Whilst projected CPI (in this example) would be considered part of financial risk for measurement purposes, where
different inflation assumptions are used for expenses or other cash flows, the extent to which these inflation assumptions differ could be considered as part of non-financial risk, with implications for the determination of the risk adjustment.

3.6. Is ‘own credit risk’ reflected in discount rates under IFRS 17?

No, non-performance risk (defined in IFRS 13 Fair Value Measurement) related to the entity that has issued the insurance contract, as ‘own credit risk’, is not reflected (see paragraph 31) in the discount rates.

Non-performance risk with respect to reinsurers is accounted for in the valuation of reinsurance contracts held however.

3.7. Are investment administration expenses reflected in discount rates (or cash flows) under IFRS 17?

There is no direct guidance in the standard about this topic, but some information can be found in BC201 which states:

- to the extent that the cash flows from underlying items affect the cash flows that arise from the liability, the appropriate discount rate should reflect the dependence on the underlying items; and

- to the extent that the cash flows are expected not to vary with returns on underlying items, the appropriate discount rate should exclude any factors that influence the underlying items that are irrelevant to the contracts. [...] Thus, the discount rate should not capture all of the characteristics of those assets, even if the entity views those assets as backing those contracts.

One view is that the IASB intended that only investment administration expenses that affect the return of the underlying items might be reflected in the discount rate or cash flows, but not both to avoid double counting. Investment administration expenses related to the actual investments of the company, under any other circumstances, might not be captured in the discount rate (nor the cash flow). They are irrelevant to the insurance contract.

3.8. How are yield curves updated?

Paragraph 36 requires that the discount rate 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. Observable current market prices correspond to the value of market instruments at the reporting date and are therefore updated at each subsequent reporting period to remain current. Unobservable inputs for which estimation techniques are necessary are developed using the best information available in the circumstances. These might be updated less frequently than every reporting period. All financial assumptions used to derive yield curves are expected to be appropriate at the valuation date.
3.9. Do contracts with cash flows that vary based on the returns on financial underlying items meet the definition of insurance contracts with direct participation features and vice versa?

Contracts with cash flows that vary based on the returns on financial underlying items may meet the definition of insurance contracts with direct participation features in Appendix A, but this not always the case.

Note that all contracts with direct participation features, by definition, have contractual terms that specify that the policyholder participates in a share of a clearly identified pool of underlying items. These underlying items are typically financial in nature and the contracts have cash flows that vary based on the returns on financial underlying items.

For contracts that do not meet the definition in Appendix A, the GMA is used or the PAA, while for ‘direct participating’ contracts, the VFA is used. In this chapter, we distinguish between “cash flows that do not vary based on the returns on any financial underlying items” and “cash flows that do vary based on the returns on any financial underlying items” in order to describe the techniques deriving appropriate discount rates. A further explanation of participation features and the description of underlying items can be found in Chapter 7 “Contracts with participation features and other variable cash flows”.

3.10. Can an equivalent (constant) discount rate be used in IFRS 17, instead of a discount curve?

A common actuarial practice is to translate a discount curve into an equivalent discount rate by solving for a constant rate such that, for the pattern of cash flows, the present value produced by using the constant rate equates the present value produced by using the discount curve. This translation is highly dependent on the pattern of cash flows. For the same (non-flat) discount curve, different constant discount rates would result were the pattern of cash flows different. Reasons to conduct this translation include for data storage simplification and calculation ease.

Paragraph 36 requires the discount rates used to reflect the time value of money, the characteristics of the cash flows and the liquidity characteristics of the insurance contracts. If the equivalent discount rate achieves the above, then it is more likely to comply with the standard. However, in using this method, current and future purposes of this method for which the single equivalent discount rate will be used, may need to be reflected on.

As discussed in question 3.2 there are different purposes for discount rates in IFRS 17. Many practitioners believe that to calculate the fulfilment cash flows the use of a discount curve is required to be consistent with paragraph 36. In this context, a single equivalent discount rate might provide information but is unlikely to have broader uses. See question 3.39 for a discussion of equivalent constant discount rates in the context of the locked-in curve.
Cash flows that do not vary based on the returns on any financial underlying items

3.11. How are cash flows, that do not vary based on the returns on any financial underlying items, discounted?

Paragraphs B80 to B85 establish two methods to determine rates for discounting cash flows that do not vary based on the returns of financial underlying items, the bottom-up approach (paragraph B80) and the top-down approach (paragraphs B81 to B85).

Both approaches are briefly discussed in BC196: ... (a) a ‘bottom-up’ approach based on highly liquid, high-quality bonds, adjusted to include a premium for the illiquidity. (b) a ‘top-down’ approach based on the expected returns of a reference portfolio, adjusted to eliminate factors that are not relevant to the liability, for example market and credit risk. The Board expects a reference portfolio will typically have liquidity characteristics closer to the liquidity characteristics of the group of insurance contracts than highly liquid, high-quality bonds. Because of the difficulty in assessing liquidity premiums, the Board decided that in applying a top-down approach an entity need not make an adjustment for any remaining differences in liquidity characteristics between the reference portfolio and the insurance contracts.

Following the approach set out in BC196, a reference portfolio would need to be defined if using the top-down approach. For the bottom-up approach, an illiquidity premium has to be estimated, which may also require a reference portfolio.

3.12. What is a reference portfolio?

IFRS 17 has no specific requirements for the reference portfolio. It could be based on actual assets held by the company or on a theoretical portfolio of assets. However, the better the reference portfolio reflects the characteristics (e.g., liquidity) of the cash flows for which the discount rate is being developed, the smaller adjustments are likely to be needed in the discount rate. When starting with the actual assets held by the company, an assessment on whether the portfolio still reflects the characteristics of the cash flows whenever the investment strategy changes materially may be done.

Factors that may differ between the characteristics of a reference portfolio and that of a portfolio of insurance contracts include, but are not limited to:

i. **Investment risks**: Investment risk can consist of credit risk, market risk, and other price risks that are inherent in the reference portfolio and are not inherent in the insurance contracts. Methods used to estimate these elements are discussed in question 3.19 (credit risk) and question 3.20 (market and other risks);

ii. **Timing**: The timing of cash flows within the reference portfolio may not be the same as that of the liability contracts. Adjustments may be considered, based on observable assets traded in active markets or on estimation techniques if the market is not active or no market exists. Estimation techniques for long duration interest rate are discussed in question 3.23;
iii. Currency: The reference portfolio of assets may contain assets that are in a
different currency than the liabilities. One approach to adjust for the different
currencies might be currency swaps.

NB a reference portfolio is different from a replicating portfolio (Paragraph B46) which
exactly matches cash flows of the contract liability in amount, timing and uncertainty, for
all scenarios.

3.13. How does the bottom-up approach work?

The bottom-up approach is described in paragraph B80 as:

a) liquid risk-free yield curve;

b) adjusted to reflect the liquidity characteristics of the insurance contracts.

3.14. What are the liquidity characteristics of insurance contracts?

Paragraph 36 states that the discount rates applied should reflect the liquidity
characteristics of the insurance contracts.

In order to understand the nature of insurance contract liquidity characteristics one may
consider the liquidity characteristics of other financial instruments: in the context of fixed
income financial instruments, liquidity is the ability to convert the asset into cash or
extinguish the liability on demand. The liquidity arises from either call or put options
embedded into the instrument or the marketability of the instrument.

BC193 specifically draws the parallel between insurance contracts and fixed income
financial instruments and suggests that liquidity characteristics of insurance contracts be
viewed from the perspective of the features embedded within the contract. This view is also
echoed in the IAA Discount Rate Monograph which, on page 38 of section IV, states: the
liquidity of a liability is a function of the basic contract provisions, and especially any options
that might exist for the policyholder that would impact the uncertainty regarding the amount
and timing of payments.

This answer addresses the liquidity characteristics of insurance contracts from the
perspective of the contract's features. Some practitioners ask if the liquidity characteristics
of insurance contracts should be assessed from the insurer's perspective. The motivation
of this view is BC194 which suggests that the motivation of including a liquidity premium is
the entity's ability, or lack thereof, to sell / put the contract. The focus of IFRS 17 in general
is on the insurance contract features and as such this answer explores liquidity from the
perspective of the contract's features.

Note that this answer focuses on qualitative assessments of insurance contract liquidity.
See response to question 3.15 for a discussion on the quantitative assessment of illiquidity
premium.
Contract features that may influence the liquidity of an insurance contract include:

- **Exit costs**: all else being equal, a contract with exit costs (e.g., surrender charges / penalties) is likely to be more illiquid than one without. Note exit is contemplated as voluntary exit / cancellation of contract and occurrence of the insured event is not considered a contract exit, as contemplated in this response.

- **Inherent value / value build-up**: If a contract’s pricing / construction is such that there is negligible / no inherent value then, other than any exit costs, it is likely to be considered liquid. If on exit of a contract there is:
  - little inherent value in the contract and there are no costs to exit the contract then the contract could be considered to be liquid;
  - little inherent value in the contract and there are costs to exit the contract then the contract could be considered to be illiquid.

For example, yearly renewable general insurance contracts, whose design builds negligible value and are without exit costs, are likely to be considered liquid.

For contracts with no cash value, increasing risk and level premium payment, longer contract boundaries are potentially less liquid than contracts with shorter boundaries as the extended boundary potentially leads to greater inherent value / value build-up. To illustrate this a twenty-year term insurance contract could be viewed as less liquid than a two year term insurance contract.

- **Exit value**: all else being equal, a contract where upon exit all / a large part of the value build-up is paid out is more liquid than one that pays out none or a small part of the value build-up. If on exit of a contract there is:
  - value in the contract and the policyholder receives all / a large part of the value of the contract, then the contract may be considered to be liquid;
  - value in the contract and the policyholder receives no / a small part of the value of the contract, then the contract may be considered to be illiquid.

Liability for incurred claims might be considered illiquid as there is no potential avenue for the policyholder to obtain the exit value yet there is tangible inherent value (else a claim would not have been made.)

The repayment of annual premiums on exit of a contract are not considered by many practitioners to be an exit value payment as they are a repayment of prepaid premiums and not of the value build-up. In such cases, contracts with annual premiums would have similar liquidity as those with monthly premiums. Forfeiture, though, of annual premiums on exit when no penalty would have existed for monthly premium policyholders, may influence liquidity differences.
The liquidity of an insurance contract likely varies over time. For example:

- The twenty-year term insurance example could be considered to be more liquid in the contract’s first year than in the contract’s fifteenth year based on the growing value of initial underwriting no longer being recent.
- The contract with high cash surrender value could be viewed as less liquid in the contract’s tenth year than in the contract’s fifteenth year based on the exit value receivable.

For operational reasons it is conceivable that an overall assessment / categorisation be made consistent with the response in question 3.16

One contract feature that is unlikely to affect the liquidity of insurance contracts is the predictability (or lack thereof) of the contract’s cash flows. The risk adjustment for non-financial risk reflects 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.

An environmental feature that is unlikely to influence the liquidity of a contract is the potential for viatical settlements. Viaticals provide policyholders, who may not place a high value on any remaining death benefits, with a payment from a third party for their contract where no or little exit value might exist as part of the contract feature. However, since the contract features remain unchanged and assuming that the insurer’s required payment is only made upon occurrence of the insured event, the existence and depth of a viatical market would seem to affect the calculation of probability weighted cash flows and would not seem to affect the contract’s liquidity.

3.15. How can the liquidity characteristics of insurance contracts be quantified?

The adjustment to reflect the liquidity characteristics of the insurance contracts has been broadly termed the illiquidity premium. Highly liquid insurance contracts would have a low (or even no) illiquidity premium while very illiquid contracts would have a higher illiquidity premium.

Data relating to illiquidity premium of insurance contracts is generally not directly available in the market. Looking beyond insurance contracts, market prices for liabilities where the issuer of debt has the possibility to redeem the debt early are also very limited.

A theoretical approach to determine the illiquidity premium is to assess possible replicating portfolios. This is discussed in question 3.29. Some practical approaches of estimating illiquidity premiums for insurance contracts include:

- Using a reference portfolio and determining its illiquidity premium using top-down techniques (see questions 3.18 to 3.20); and
- Comparing yields on illiquid and liquid assets, both with the same or similar degree of credit risk. The commonality in these approaches is that the instruments are
considered to have the same degree of credit risk and as such the spread difference would be largely attributable to liquidity. For example:

- Covered vs risk-free bonds: Covered bonds are illiquid bonds which are backed by collateral and as such, are considered safe;

- Public and private debt issued by the same issuer; and

- Highly liquid and less liquid mortgage backed securities.

If the asset portfolio used in estimation is more liquid than the insurance contracts being considered, then additional adjustments may be needed. The illiquidity premium of insurance contracts may be different from market assets. However, this is dependent on the contract itself.

What follows is an example of a simple method used to relate the illiquidity premium of insurance contracts to the asset portfolios:

Assume liability illiquidity premium = r * asset portfolio illiquidity premium + constant illiquidity premium difference where the constant term and multiplicative factor (r) is set based on either judgement or data if any is available. In the selection of the factor differing market environments may be taken into consideration. For example, using a high multiplicative factor (r) and a constant = 0 may not produce a convincing result during a credit crisis. It would be difficult to justify insurance contracts having a higher illiquidity premium than the return on assets available for investment earning the illiquidity premium. This, however, is not a directly relevant factor in setting the illiquidity premium level.

The above approach is based on a top-down approach. For those using bottom-up there may be a discernible relationship between the level of the illiquidity premium and other market data such as the level of risk-free rates and / or the level of credit spreads. For example, there may be a different illiquidity premium in a 10% rate environment than in a 5% environment. However, if analysis showed the same level of credit spreads in these disparate environments then the level of illiquidity premiums in these environments might be the same.

Little is known about the term structure of illiquidity premium in current research and it is expected to be a function of the modelling approach selected. One reference that discusses the term structure of the illiquidity premium is (Kempf, 2011). Note that if the liquidity characteristics vary over time, then the implicit illiquidity premium in the discount rate would also be expected to vary over time. However, materiality / modelling and operational considerations may also influence approach choice.

An important caveat in setting the illiquidity premium is discussed in paragraph B90 which states the discount rates should not include any implicit adjustments for non-financial risk.
The illiquidity premium corresponds to the estimate reflected in the future cash flows while uncertainty attributable to non-financial risk is reflected in the risk adjustment for non-financial risks. In calculating these values, paragraph B90 states that double counting should be avoided.

3.16. Are different products expected to have different illiquidity premiums?

Insurance contracts exhibiting different features may have different exit costs, inherent value and/or exit value. As such, products are expected to have different illiquidity premiums. Products within the same portfolio, however, may have similar illiquidity premiums / characteristics since they are similar risks. An entity may elect to use a single average illiquidity term structure across products within a given portfolio.

3.17. If a contract is reinsured, would the direct issuer use the same illiquidity premium when valuing the direct and the ceded contract?

NB - the illiquidity premium from the reinsurer’s perspective is not in scope for this question as it would be determined in accordance with the previous questions.

Paragraph 63 states that “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”.

This consistency is required to the extent that both the underlying contracts and the reinsurance contracts share the same characteristics. This requirement does not necessarily permit the entity to use the same assumptions used for measuring the underlying contracts when measuring the reinsurance contracts if those assumptions are not valid for the terms of the reinsurance contracts held. If different assumptions apply for the reinsurance contract, the entity uses those different assumptions when measuring that contract.

For example, consider a coinsurance contract where a predetermined proportion of all the direct contract characteristics are transferred to the reinsurer. In that particular case, one could expect the direct and ceded insurance contracts to exactly have the same illiquidity premium. On the other hand, consider a level premium term life insurance contract for which only mortality risk would be reinsured on a yearly renewable term basis. In this case, the direct and the reinsurance contracts have different characteristics and a different illiquidity premium would apply. Overall, in this example, the yearly renewable reinsurance contract would be expected to be more liquid than the level premium direct contract.

3.18. How does the top-down approach work?

An entity may determine appropriate discount rates for insurance contracts using a top-down approach (paragraph B81). Under this approach, discount rates are based on current market rates of return of a reference portfolio of assets which are adjusted to remove risk
characteristics embedded within the reference portfolio but that are not inherent in insurance contracts. These adjustments are discussed in questions 3.19 and 3.20.

IFRS 17 does not require that adjustments to the yield curve be made for residual differences in liquidity characteristics of the insurance contracts and the reference portfolio. Nonetheless, an entity may still adjust the yield curve for these differences, as discussed in questions 3.14-3.17.

3.19. How could the reference portfolio be adjusted for credit risk?\(^\text{11}\)

For debt instruments, the effect of credit risk would need to be eliminated from the total bond yield. The effect of credit risk usually comprises two components: the expected credit losses and the unexpected credit losses (i.e., compensation for bearing that risk). There is a wide range of practices used to estimate the required deduction for credit risk inherent in bond yields. Observed practices include:

i. **Market-based techniques**: Credit Default Swap (CDS) spread, where available, is used as a measure of the inherent credit risk in bonds and comprise the expected as well as the unexpected credit losses. An advantage of this approach is that the inherent bond credit risk is directly and instantly reflected in the CDS spread. A disadvantage is that it may capture additional risks (e.g., counterparty credit risk) and costs and, as such, may overestimate the bond credit risk. On the other side the CDS premium reflects the possibility that the CDS provider may default – and therefore the CDS premium is lower than it would be were this not the case – and therefore the CDS could underestimate the bond credit risk (where this is the case it can result in the illiquidity premium being overestimated).

ii. **Structural-model techniques** such as the Merton Model, Leland and Toft Model and EDF-Based Model. These models put in relation the capital structure of a company to an option on the equity of the same company and the value of its debt. For further information see the IAA Discount Rate Monograph Section IV and Agrawal, Arora and Bohn.

iii. **Expected / Unexpected Credit Loss (ECL / UCL) models**: ECL models usually comprise an estimation of the probability of defaults (including the future cost of downgrades) and an estimation of the loss given default. One could leverage on models developed for calculating the IFRS 9 lifetime impairment provision (e.g., panel logit models, dynamic transition matrix models). Usually based on historical information, point-in-time adjustments might be needed to calibrate estimations to current economic situation and forward-looking information (e.g., factor ratio models, scorecard models). UCL models are based on an adjustment to reach a selected

\(^{11}\) Consistency with what the entity is doing under IFRS 9 (impairment provisions), might be discussed later.
percentile credit loss level (confidence level approach). UCL could also be estimated as the compensation required by an investor to bear the credit risk associated with the instrument (cost of capital approach).

NB - several of the above approaches used to estimate the deduction for credit risk are complex and as such it has been observed that insurers have typically simplified expressions for the deductions required for credit risk and calibrating these expressions based on the above approaches. Examples of such expressions include:

a. Deduction for credit risk = Expected Default Rate + X% (Total Bond Spread – Expected Default Rate)

b. Deduction for credit risk = X% (Total Bond Spread)

c. Deduction for credit risk = Expected Default Rate * (1 + compensation risk)

The advantage of the first two approximations is that the credit risk premium changes as a function of the corporate spread.

3.20. How could the reference portfolio be adjusted for market and other risks?

As mentioned in paragraph B85, IFRS 17 does not specify restrictions on the reference portfolio of assets used in applying paragraph B81. For example, equity or real estate investments may also be considered in the reference portfolio. However, the estimation process may be much more challenging since many risks are specific to these investments and not necessarily related to the insurance contract characteristics. Such risks include, but are not limited to, market risk, variability in amount and timing of dividend, the risk of delay in finding a new tenant, obsolescence and unexpected deterioration.

Other market factors, such as market sentiment and market inefficiencies, influence the reference portfolio assets and might result in some fluctuations in the overall spread. Unless measured and treated separately, these factors might be attributed to the illiquidity component of the asset yield and hence would also be included in the liability discount rate.

3.21. How should the yield curve duration be extended beyond available market data?

In constructing the discount curve, a core principle is that the discount rates are consistent with observable market prices. If liability cash flows extend beyond a certain point, such discount rates may not be directly observable in the market, or market data for certain durations could be scarce. An entity may then choose to estimate appropriate rates beyond those observable in the market by interpolating between data points that are observed directly in the market, and between observable data points and rates estimated beyond the observable term structure. There are many potential interpolation approaches that can be used to derive a yield curve using interpolation and extrapolation techniques. In Chapter V of the Discount Rate Monograph some examples of possible approaches of interpolation and extrapolation are presented.
In applying an estimation technique, as per B78, an entity shall maximise the use of observable inputs and reflect current market conditions from the perspective of a market participant.

3.22. When does the observable market end?

The determination of the end of the observable market is a function of the financial market being considered and as such is potentially affected by whether the top-down or bottom-up approach is elected.

- For example, if the top-down approach is adopted and the reference portfolio comprised of debt instruments then the end of the observable market in the context of those debt instruments might need to be considered.

- Alternatively, if the bottom-up approach is adopted and the risk-free curve is based on government bonds then the end of the observable market in the context of those government bonds may be considered. If the risk-free curve is based on swap rates then the end of the observable market in the context of swap rates in that currency may be considered.

In general, IFRS 17 requires the use of market data when available. For example, if the market for the available financial instruments in the reference portfolio would end after 10 years and market data is available for a bottom-up approach up to 30 years, the entity might need to consider the suitability of using a top-down approach.

Once the financial market of interest has been determined, the longest duration is determined at which the market data is both available and relevant. Market data for longer durations can be used if market prices are available. The following criteria might be looked at to perform this assessment:

- availability of financial instruments;
- bid-offer spread;
- trade frequency; and
- trade volume.

For example, in a given market, 1, 3, 5, 7, 10, 20 and 30-year instruments may be available and 50-year instruments may infrequently be traded. In this example, since the 50-year instrument is infrequently traded, the market might not be considered active; data at the 50-year point is unlikely to be considered available and relevant for construction of the curve. The core premise in determining the end of the observable market is determining the
last point at which “available and relevant” market data exist for construction of the yield curve, consistent with paragraph B78.\(^\text{12}\)

In the bottom-up approach, it may be difficult to split the spread on the reference portfolio that is used to derive the illiquidity premium between a credit spread and an illiquidity premium. This may be especially challenging for longer durations. In those situations, estimation techniques might be used for this split. In the top-down approach, the current credit spread, excluding an illiquidity premium, is needed to determine the discount rate. Also, here the split between credit spread and illiquidity premium has to be determined and for longer durations a separate credit spread is not available and estimation techniques might be used.

3.23. Which assumptions can be made for long durations where there is not enough market observable data?

The following two approaches are often used:

- extrapolation based on last observable constant rate; and
- extrapolation of the last observable rate to an ultimate rate.

NB – there may be other approaches that are not considered here.

Extrapolation techniques based on the last observable constant rate have the advantage of simplicity and are based on the last observable information. On the other hand, using an ultimate rate might have the advantage of including additional market participant inputs (such as economic expectations) and may be considered more consistent with paragraph B82(c) (i.e., more weight on long-term estimates than on short term fluctuations). Setting an ultimate level is discussed in question 3.24.

The rates to be used and derived can either be expressed as forward rates or as spot rates. The use of one form or the other requires some expert judgement and can be translated back in the other form. Forward rates are frequently used to represent future implicit market rate expectations. Spot rates are generally used to derive today’s market price of a future cash flow. The final assumed curve may be expressed in both forms to ensure it is balanced with market reasonable expectations (e.g., it may be desirable to avoid important jumps and / or cliffs). One of the criteria commonly adopted by finance practitioners and academics for judging yield curve construction is that forward rates are continuous. Reasons for this include that discontinuity in forward rates implies either implausible expectations about future short-term interest rates, or implausible expectations about holding period returns (McCulloch and Kochin [2000], J. Huston McCulloch and Levis A. Kochin.

\(^{12}\) In other frameworks, such as Solvency II, a similar concept is referred to as the “last liquid point” however IFRS 17 guidance does not contain this phrase.
In any extrapolation model, the level and position of the end points are required. As such, the year at which the ultimate rate is achieved needs to be set, and would depend on considerations related to how the ultimate rate was derived. It is interesting to note that if the same assumption is used, an ultimate spot rate would require a much longer convergence period than an ultimate forward rate in order to produce equivalent results.

3.24. How is the ultimate rate level set?

In the process of setting the ultimate rate, both retrospective and prospective approaches might be considered. According to paragraph B44 “Estimates of market variables shall be consistent with observable market prices at the measurement date. An entity shall maximise the use of observable inputs and shall not substitute its own estimates for observable market data”. Further, the information used in the estimation would need to be appropriate for the expectations for the long durations of the ultimate rate.

A retrospective approach has the advantage of simplicity. However, macroeconomic fundamentals may have changed over time. Furthermore, the choice of the starting point could be considered to be arbitrary. The observed period may be chosen to be long enough to eliminate or significantly reduce cyclic effects. Examples of retrospective approaches include using an arithmetic mean (with assumed underlying normal distribution) or a geometric mean (with assumed underlying lognormal distribution) of the historical nominal interest rate or real-rate.

A very simple prospective approach would be to use the forward rate or spot rate at the last liquid point. Another approach might be to make use of well-known economic metrics reflecting market participant expectations. Examples are the central bank inflation target or neutral rates\textsuperscript{13} and OECD GDP growth forecasts.

One might also want to use historical observations and adjust them to obtain a realistic rate in a prospective approach. Economists have studied the decrease of the real interest rates around the world over the past decades e.g., (Rachel, 2015). Depending to which extent the economy of a country or currency is open, global developments influence the local interest rates. Some argue that there is a global long term real risk-free rate and that differences in the nominal rates are only caused by differences in the targeted inflation rate of the central banks. Others point to differences in the long-term rates between currencies that are difficult to explain. The decline in the real rate is a global trend however. Understanding this trend may help in setting prospective assumptions. Rachel (2015) identifies possible causes of the decline in the long-term rate. Some of them may revert and cause the real rate to increase, while others are unlikely to revert.

\textsuperscript{13} The neutral (or natural) rate of interest is the rate at which real GDP is growing at its trend rate, and inflation is stable. It is attributed to Swedish economist Knut Wicksell, and forms an important part of the Austrian theory of the business cycle.
Due to increasing globalisation, real rates across groups of countries with similar economic environments have the tendency to be closer together. See also question 3.4. As such, for these countries the same ultimate real rate may be used for liabilities with similar liquidity characteristics. The nominal rates have to be corrected for inflation. This might be the inflation targeted by the central bank.

**Cash flows that vary based on the returns of any financial underlying items**

3.25. Why is it important to distinguish between the nature of the dependency between cash flows and underlying items?

Cash flows may depend on the return of financial underlying items\(^{14}\). It is important to distinguish between a linear and a non-linear dependence. A non-linear dependence can be, for example, caused by a combination of dependence of the cash flows on the return of financial underlying items and a guarantee on the return of those financial underlying items. The valuation approach to be used in the situation of a linear dependence is discussed in question 3.26 and the valuation approach to be used in the situation of a non-linear dependence is discussed in question 3.27.

3.26. How are cash flows, that do vary based on the returns of any financial underlying items, discounted?

Paragraph B74 (b) provides guidance for cash flows that vary based on the returns on any financial underlying items. These cash flows shall be:

(i) discounted using rates that reflect that variability; or

(ii) adjusted for the effect of that variability and discounted at a rate that reflects the adjustment made.

This means that projection assumptions should be consistent with discounting to ensure an appropriate approach whether deterministic or stochastic methods are used. Deterministic methods are possible where there is linear dependence, i.e., where the insurance contract has no embedded options or guarantees.

Under (i), cash flows are projected based on the expected risky returns of the financial underlying items. If the dependence is linear, this might be done using a deterministic real-world projection rate (or curve), i.e., including a risk premium. In that case, the discount rate (or curve) to be used shall reflect that variability, and thus, also include a risk premium.

Under (ii), cash flows are adjusted for the effect of that variability. Again, if the dependence is linear, one might project cash flows using investment returns implied by a deterministic

\(^{14}\) As stated before, one must be careful in distinguishing cash flows that do and do not vary based on the returns on any financial underlying items.
risk-free rate (or curve). In that case, the discount rate (or curve) to be used shall also be on a risk-free basis.

Both approaches avoid any valuation mismatch and double counting, since the discount rate is consistent with the rate used for the cash flow projection. Theoretically, both valuation approaches are expected to lead to the same result.

3.27. What approaches can be used if the dependence of the cash flows on the financial underlying items is non-linear?

As discussed in paragraph B76, cash flows could vary with returns on financial underlying items, but be subject to a guarantee of a minimum return. These cash flows do not vary solely based on the returns on the financial underlying items, because there might be some scenarios where the cash flow will not vary based on the financial underlying items, e.g., when the guarantees are in-the-money. This is an example of a non-linear dependence.

Here are some approaches (but not an exhaustive list) that might be used in the valuation if the dependence of the cash flows on the financial underlying items is non-linear (paragraph B77), noting the requirement for the measurement to be consistent with observable market prices (paragraph B48):

- Stochastic modelling techniques based on risk neutral scenarios for investment returns on underlying items. In this technique, the projected average investment returns on the financial underlying items are calibrated to be equal to the deterministic risk-free discount rate (with adjustment for liquidity as appropriate). In each scenario, the net present value is calculated. The value of the cash flows of the insurance contract is equal to the average of the net present values of all scenarios.

- Stochastic modelling techniques based on real world scenarios for investment returns on underlying items. The financial underlying items are projected on a stochastic real-world basis. The discounting is done with a stochastic real-world deflator set, which is a set of interest rates that ensures the same valuation outcome as using risk neutral scenarios. (See IAA Monograph on Stochastic Modeling.) Also, in this approach, the net present value is calculated for each scenario. The value of the cash flows of the insurance contract is equal to the average of the net present values of all scenarios.

- Replicating portfolio techniques (paragraphs B46 and B47). These are discussed in question 3.29.

- A closed form solution might also be used where this exists depending on the nature of non-linear dependence.

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3.28. When do cash flows need to be disaggregated?

Paragraph B77 states that an entity is not required to divide estimated cash flows into those that vary based on the returns on financial underlying items and those that do not. If it does not, it shall apply discount rates appropriate for the estimated cash flows as a whole; for example, using stochastic techniques.

In some cases, it might be easier to disaggregate cash flows than to apply discount rates appropriate for the estimated cash flows as a whole. One example might be a life insurance contract that provides a fixed death benefit plus the amount of an account balance if the insured person dies, and the account balance if the contract is cancelled. In this case, dividing the cash flows and applying different approaches might be practical for cash flows that vary based on the returns on financial underlying items vs those that do not.

In some other cases, it might be easier using stochastic techniques than trying to divide the cash flows. This could be the case when cash flows do vary with returns on financial underlying items but are subject to a guarantee of a minimum return.

3.29. How can replicating portfolios be used?

Paragraph B46 states that “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. […] If a replicating portfolio 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.”

It might not be possible to find a replicating asset that exactly matches the insurance contract cash flows in all scenarios. Nonetheless, replicating assets may exist for some of the cash flows that arise from insurance contracts. One may also strive to find a portfolio of assets that will reproduce characteristics of some insurance contracts. As per paragraph B48, judgement is required to determine the technique that best meets the objective of consistency with observable market variables in specific circumstances. The general process might start with the simplest method and progresses to the use of more involved methods as necessary.

For example, such techniques might include the following assessments of insurance contract cash flows while maintaining non-financial risk assumptions at expected values:

i. Asset cash flow matching: Insurance contract cash flows are replicated in terms of amount and timing with available asset cash flows. This method is similar to building a reference portfolio.

ii. Optimisation: Assets are then chosen to match, as closely as possible, the key financial risk metrics related to these cash flows (e.g., duration matching).
iii. Dynamic replication: Stochastic valuation techniques are used to derive risk-factor sensitivities for the insurance contract cash flows that can be replicated directly.

The choice of method depends primarily upon the nature and complexity of the asset or liability under consideration and the purpose of the replicating strategy. For example, if the asset or liability is relatively simple, it might be possible to identify a pure replicating portfolio (e.g., capital guaranteed equity product and a vanilla European equity option). However, for more complex assets or liabilities, such corresponding assets may not exist, even theoretically. In this case, optimization techniques might be used to match the financial risk metrics as close as possible (e.g., path-dependent guarantees proxied using a portfolio of vanilla and exotic options). In other complex cases, optimization techniques may deliver poor results, hence the need to make use of dynamic replication techniques.

3.30. How is the discount rate adjusted for illiquidity if cash flows do vary based on the return of financial underlying items?

The response to questions 3.14 to 3.17 explain the assessment of contract liquidity and the resulting application of liquidity premiums in discount rates.

Consistent with paragraph B74 (b), if the cash flows that vary based on the return of financial underlying items are based on a projection of returns that include an illiquidity premium, this illiquidity is logically also reflected in the discount rate. If the cash flows that vary with the return on financial underlying items are projected without an illiquidity premium, the discount rate is chosen accordingly.

Cash flows that accrue to the holder of an insurance contract may depend on a combination of the return on financial underlying items, a guarantee on the return of the financial underlying items and other insurance cash flows subject to non-financial risk. All the following elements contribute, depending on their significance in the value of the cash flows, to the overall illiquidity:

- the illiquidity premium from the financial asset underlying the contract that is passed to the policyholder in so far it is included in the projection;
- the guarantee on the return of the financial underlying items; and
- other insurance cash flows subject to non-financial risk.

The requirement for consistency with observable market prices (paragraph B48) implies that any liquidity premium adjustments made in the valuation of options and guarantees would need to be followed by a consideration of the calibration of stochastic models to ensure that market consistency is maintained.

As discussed in question 3.15, the risk adjustment reflects the uncertainty of non-financial risk and is distinct from the other fulfilment cash flows which can be discounted using a discount rate that is appropriately adjusted to reflect liquidity characteristics.
3.31. How is the present value of future cash flows adjusted for financial risk?

In a market consistent projection, either using risk neutral or real world techniques with deflators, market variables associated with future cash flows are calibrated to be consistent with observable market prices (as required by paragraph B44). This ensures that the cash flows are implicitly adjusted for financial risk in a matter consistent with the pricing of financial instruments. This implicit adjustment for financial risk is released over the duration of the contract and accounted for as financial risk.

**Premium Allocation Approach (PAA)**

3.32. Under which circumstances is discounting required for a group of contracts subject to the PAA in measuring the liability for remaining coverage?

If the entity uses the PAA for a group of insurance contracts, as per paragraphs 53-59, discounting is only required in special circumstances in the liability for remaining coverage:

- For a group of contracts with a significant financing component where the PAA is applied, unless, 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 (paragraph 56); and

- For contracts that have become onerous (paragraph 57), unless time value of money for the liability for incurred claims is not considered under paragraph 59.

3.33. When required, which discount rates are used for the liability for remaining coverage for contracts that have a significant financing component within a group of contracts where the PAA is applied?

For the liability for remaining coverage of contracts with a significant financing component within a group of contracts where the PAA is applied, as per paragraph 56, the cash flows might be discounted. The discount rate is always the locked-in rate at inception of the contract (paragraph B72(d)).

3.34. When required, which discount rates are used for onerous contracts where the PAA is applied?

If the group of insurance contracts becomes onerous (as per paragraph 57 (b)), the difference between the carrying amount of the liability using PAA (paragraph 55) and the fulfilment cash flows that relate to remaining coverage of the group GMA (applying paragraphs 33-37 and paragraphs 86e-92) should be calculated. The calculation of liability values under the GMA is conducted at either the current rate or the locked-in rate at inception of the contracts for the P&L if the OCI option is used (questions 3.36 - 3.41).

3.35. When required, which discount rates are used for the liability for incurred claims?

For incurred claims, discount rates are used unless cash flows are expected to be paid or received in one year or less from the date the claims are incurred the GMA is used without
a CSM, which is not applicable for the liability for incurred claims. The calculation of liability values under the GMA is conducted at the current rate for the balance sheet or at the locked-in rate for the P&L if the OCI option is used. If the PAA is used, the locked-in rate at the date of the incurred claim is used. If the GMA is used, the locked in rate is determined at the date of the inception of the contract.

Locked-in rates

3.36. What interest rate is accreted on the CSM?

For contracts without direct participation features, the interest rate accreted on the CSM is based on the discount rates determined at initial policy recognition for cash flows that do not vary based on the return of financial underlying items (paragraph B72(b)). It may include an illiquidity premium. This is referred to as the locked-in curve.

IFRS 17 is not specific regarding the method to roll forward the curve. One approach might be to derive each year’s discount factors with the forward rate for that year, from the locked-in curve. This forward rate would be the rate to accrete on the CSM.

If there are direct participating features, the entity’s share of the profit is discounted using current rates (paragraphs B74b).

3.37. What interest rate is used to measure the changes in the CSM?

For contracts without direct participating features in the contract, the interest rate used to measure the changes in CSM is the same as the interest rate described in question 3.36. It is the interest rate accreted on the CSM is based on the discount rates determined at initial policy recognition for cash flows that do not vary based on the return of financial underlying items.

If the VFA is used, changes are measured using the current rate.

3.38. What is the locked-in yield curve when the OCI option is used 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 policyholders?

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 policyholders, and the OCI option is used, the change in the present value of the cash flows presented in the P&L is based on the locked-in curve. That means that the discount rates are determined on the yield curve at the date of initial recognition of the group of contracts or the date of the claims (paragraphs B72 (e)(iii)), applying paragraph 36 to cash flows that do not vary based on the returns on any financial underlying items.
3.39. What is the locked-in rate 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?

These contracts typically have participating features, but fail to meet the definition of “Direct Participating” contracts. If the entity plans to recognise insurance finance income or expenses in OCI, discount rates are used that allocate the remaining revised expected finance income or expenses over the remaining duration of the group of contracts at a constant rate\(^\text{16}\). (Paragraphs 88(b) and B132).

3.40. Can a single equivalent discount rate be used instead of the locked-in discount curve?

See question 3.10 for introductory context.

The locked-in curve is determined at initial recognition and if it were to be translated into a locked-in constant rate the pattern of cash flows at initial recognition would presumably be used in the derivation. Potential challenges that may occur in the subsequent use of this locked in rate are as follows:

- One purpose of the locked-in discount curve is to measure the changes to the CSM for insurance contracts without direct participation features. A change to the CSM would only arise if the pattern / level of cash flows was altered. Since the locked-in constant rate at inception would be derived based on the pattern of cash flows at inception application of this rate to an altered pattern of cash flows may be inappropriate. To gauge the materiality a comparison of the originally derived locked-in rate and the revised locked in constant rate based on the new pattern of cash flows would be required.

- Another purpose of the locked-in discount curve is to accrete interest on the CSM. Given this different purpose, the use of the locked in constant rate based on the pattern of liability cash flows may be inappropriate for interest accretion. Rather a locked-in discount rate based on equating the expected CSM interest accretion may be more relevant. Further challenges similar to the above may be encountered when the pattern / level of liability cash flows changes, changing the CSM and potentially the equivalent locked-in discount rate.

3.41. How is the average locked-in curve determined for a group of contracts?

The discount rate for the calculation of the CSM at issue for contracts in a group could be determined in, amongst others, any of the following ways.

\(^{16}\) See also example 15 of the Illustrative Examples
a. Calculating the CSM at issue for each contract within the group using the discount curve at each contract’s respective issue date – i.e., a single curve would not be used. This, however, might be an impractical implementation option.

b. Calculating the CSM at issue for the group of contracts as at the date of initial recognition using the discount curve as at the date of initial recognition. This is thought to be consistent with IFRS17 because the Standard refers to the date of initial recognition for the group and not the date of initial recognition of individual contracts. See paragraph 25 for the definition of the date of initial recognition of a group.

c. Calculating the CSM at issue for the group as at the date of initial recognition using a weighted average discount curve (paragraph B73). To apply this approach suitable weights would need to be defined as they are not specified in the guidance. One potential option for weighting might be to use the measure of coverage units. Note that as per paragraph 22 the dates of initial recognition should not include more than one year.

The methodology for calculating the locked-in curve across one or more reporting periods would be driven by the option chosen above. As per paragraph B73 a weighted average discount curve might be created with a potential option that might exist for weighting being the measure of coverage units.

- If options a. or c. above were chosen then the locked-in curve would be a weighted average curve of the specific curves used (i.e., the curves to be weighted would be from the actual issue dates).

- If option b above was chosen then the locked-in curve would be a weighted average curve of the curves at the date of initial recognition. That is, there would only be a single curve based on a single day from each reporting period which would then be weighted using the selected measure.

When calculating weighted average discount curves, one approach might be to average discount factors.

References


Chapter 4 – Risk Adjustments for Non-Financial Risks

Before consulting this chapter, be sure to read the Introduction to this IAN, particularly the sections on References to IFRS 17, Materiality and Proportionality

4.A. What does this chapter address?

This Chapter considers the criteria and measurement of the risk adjustment for non-financial risk required as part of the General Measurement Approach under IFRS 17 including the purpose and general requirements of the risk adjustment, what risks would typically be covered and specific considerations in determining the risk adjustment. This note discusses how to reflect risk mitigation such as diversification and risk sharing, catastrophic and other infrequent events, qualitative risks considerations, use of different approaches by line of business, and general considerations in selecting and calibrating a risk adjustment approach. For detailed risk adjustment methods and how to apply them, reference is made to the IAA Monograph on Risk Adjustments. This Chapter also covers high level disclosure requirements including confidence level disclosure, and issues around allocation of risk adjustments to a lower level.

In this Chapter, the term “risk adjustment” refers to the “risk adjustment for non-financial risk”, as defined in IFRS 17. In other contexts, risk adjustments may be referred to as risk margins

4.B. Which sections of IFRS 17 address this topic?

Paragraphs 37, 81, 101, 117-119 and B86-B92 provide guidance on this topic.

BC 206 - 217 also provides background on the subject.

4.C. What other IAA documents are relevant to this topic?

To support the selection of an approach or approaches for estimating the risk adjustment, an educational IAA Monograph: Risk Adjustments under IFRS 17 has been produced. The main intention of the Monograph is to provide focus on methodologies and approaches, to document and build on common approaches that have been developed so far, and to explore ways in which IFRS 17’s entity-specific approach may be incorporated into them
4.1. What is a risk adjustment?

Under IFRS 17, insurance contract liabilities are principally measured as defined in paragraph 32:

‘On initial recognition, an entity shall measure a group of insurance contracts at the total of:

(a) the fulfilment cash flows, which comprise:

(i) estimates of future cash flows (paragraph 33–35);

(ii) 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 (paragraph 36); and

(iii) a risk adjustment for non-financial risk (paragraph 37).

(b) the contractual service margin, measured applying paragraph 38–39.”

The “risk adjustment for non-financial risk” is a defined term in IFRS 17.

Appendix A states - “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”. A similar definition is also included in paragraph 37.

This Chapter primarily discusses the risk adjustment for non-financial risk of insurance contracts accepted by the entity. The risk adjustment for ceded reinsurance (referred to as reinsurance held in IFRS 17) is governed by paragraph 64. The application of risk adjustments for ceded reinsurance is discussed in Chapter 9 – Reinsurance of this IAN.

4.2. What is the purpose of the risk adjustment in IFRS 17?

Paragraph B87 states:

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.

As such, it measures the value of a liability, related to unexpected costs, that the entity places on the uncertainty and variability (see Question 6.6) inherent in insurance cash flows. As IFRS 17 provides only the principles regarding how this should be done, it will be important to those who determine and rely on such values that the quantification of such a liability value be based on methodologies and / or approaches that are robust and are a fair reflection of this value.

As most users only see what is published in the entity’s financial statements, it is important that these liability values, and changes in such values, are based on an adequate understanding of the basis on which the risk adjustment is determined and of any changes
in that basis. This understanding will underlie the entity's ability to provide appropriate disclosures as required by IFRS 17. The entity's understanding will enhance its communications, enable consistency to be recognised and allow relevant comparisons to be made, as appropriate.

An important aspect of the communications among those responsible for determining an entity's risk adjustment is the explanation and insight regarding how the entity's views with respect to the compensation it requires for bearing risk and uncertainty has been incorporated in the determination of the risk adjustment. Such communications will be expected to reflect a thorough understanding of the entity's views with regards to risk aversion, risk diversification and the uncertainty surrounding the values being estimated.

4.3. What are the IFRS 17 requirements for risk adjustment?

IFRS 17 does not provide guidance on appropriate techniques and methods to set the risk adjustment. In paragraph 37, it simply requires that:

“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.”

The application guidance states, in paragraph B91, that a risk adjustment should possess the following five characteristics:

(a) “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;

(b) for similar risks, contracts with a longer duration will result in higher risk adjustments for non-financial risk than contracts with a shorter duration;

(c) risks with a wider probability distribution will result in higher risk adjustments for non-financial risk 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 for non-financial risk; 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.”

It should be noted that the risk adjustment relates only to non-financial risks inherent in the insurance contract and its cash flows. Paragraph B86 states that

“The risk adjustment for non-financial risk relates to risk arising from insurance contracts other than financial risk. Financial risk is included in the estimates of the 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 (see paragraph B14).”

Risks reflected through the use of market consistent inputs are excluded. Other Non-financial risks that may not arise directly from the insurance contracts, such as asset-liability mismatch or general operational risks, should not be reflected in the risk adjustment
for non-financial risks (See question 4.7 for a fuller discussion of which non-financial risks are considered.).

This general guidance means that there is no single right way for an entity to set the risk adjustment. In general, there are other important considerations that will be relevant to how an entity determines its approach to estimating the risk adjustment:

- consistency with how the insurer assesses risk from a fulfilment perspective;
- practicality of implementation and ongoing re-measurement; and
- translation of risk adjustment for disclosure of an equivalent confidence level measure.

Therefore, a variety of methods are potentially available, although their ultimate usage depends on the extent to which they meet the criteria above, given the specific circumstances of the company. Potential methods include, but are not limited to, quantile techniques such as confidence level or CTE, cost of capital techniques, or even potentially simple techniques such as directly adding margins to assumptions or scenario modelling.

There are also disclosure requirements related to the risk adjustment (see question 4.15) and chapter 15.

4.4. What is the role of actuarial input on risk adjustment?

In actuarial terms the risk adjustment is intended to reflect the value of the uncertainty inherent in the insurance cash flows under the contract. It is expected that actuarial input, both quantitative and qualitative, will be needed.

This actuarial input falls into four parts and can:

- assist in understanding and assessing the risk aversion of the entity (its attitude toward risk see questions 6.9 & 6.10), as it relates to the uncertainty and variability of insurance cash flows, and in understanding the extent to which the entity considers “the degree of diversification benefit the entity includes when determining the compensation it requires for bearing that risk” [paragraph B88(b)].

- provide quantitative measures to help evaluate the variability inherent in the insurance contracts being valued and the uncertainty which underlies such quantitative measures.

- assist in designing an approach to assess a value in terms of the compensation for bearing risk that reflects the entity’s risk aversion, in the context of the relevant risks, and in the context of the diversification affecting the compensation for such risks.

- provide explanations and insights to help in communicating the understandings and judgements involved, such that the entity’s board and management can have the appropriate level of direction and oversight regarding how the risk adjustment is determined.
4.5. What is the role of judgement in estimating the risk adjustment?

Judgement may be needed for a variety of reasons including, but not limited to:

- in the selection of the approach to estimate the risk adjustment,
- in the assessment of the entity’s risk aversion,
- in the estimation and assessment of variability and uncertainty, depending on the data available,
- in the assessment of diversification, depending on the complexity of the business written, and
- in the assessment of how risk aversion interacts with variability and uncertainty in the determination of the risk adjustment.

In general, it will be important that the entity’s board and management properly understand the process and the judgements used to determine the entity’s risk adjustment and how their oversight and management roles and responsibilities are being satisfied.

4.6. What does “risk” mean in this Chapter?

The word “risk” can have a variety of meanings, in the context of insurance.

- It can mean the two-sided risk that an outcome be greater or less than the estimated expected value of that outcome, as a result of variability and uncertainty. This is the meaning intended in this Chapter. To emphasise this, this Chapter sometimes refers to “risk (variability and uncertainty)”.
- It can mean the one-sided risk that an outcome will be worse than its expected value.
- It can refer to the subject of the insurance.
- It can refer to the insured events.

In this Chapter variability refers to the statistical variation inherent in the insurance process. This is amenable to statistical analysis of experience data. Given enough data, it can be quantified in terms of the variance and higher moments of a suitable probability distribution.

The concept of uncertainty is used here to depict a concept of risk that is broader than statistical variability. Some common aspects of uncertainty can include:

- Uncertainty in the estimates of expected value, variance and higher moments of a probability distribution. This uncertainty can be quantified as part of the statistical analysis.
- Uncertainty in the choice of probability distribution. Complex insurance processes seldom conform exactly to standard probability distributions. It may only be possible to partially quantify this uncertainty by considering alternate distributions.
Uncertainty in the experience data will arise when the data contain more or fewer extreme events than normal. The selection of a suitable probability distribution may assist in quantifying this uncertainty.

Uncertainty also arises because future circumstances can vary from the past. Environmental changes, technological changes and societal changes are all reasons why distributions based on past experience may need to be interpreted cautiously as guides to the future. Appropriate adjustments from past to future experience are a matter of judgement and introduce uncertainty into both the projected expected value and its variability.

How to appropriately reflect these sources of variability and uncertainty in the risk adjustment depends on the extent of the data and on the materiality of the potential impact on the result from the viewpoint of the reporting entity. In some cases, it may be appropriate to analyse the details extensively. Alternatively, it may be appropriate to undertake more limited analysis and to reflect other aspects of uncertainty based partly or wholly on judgement. Where data are limited, it may be necessary to rely very heavily on judgement. In assessing the extent of analysis which may be appropriate, judgement is needed as to the balance between the effort involved in undertaking deeper analysis versus whether the deeper analysis will result in a change in the estimates used to reflect risk and uncertainty that is both material and statistically meaningful.

4.7. What risks should be considered?

As discussed in question 4.3, paragraph B86 requires risk to be split between financial and non-financial risk and considered separately.

Paragraph B89 states that:

“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 shall reflect all non-financial risks associated with the insurance contracts. It shall not reflect the risks that do not arise from the insurance contracts, such as general operational risk.”

Furthermore, financial risk is defined in Appendix A as:

“The risk of a possible 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.”

Under these definitions, the risk adjustment for non-financial risk would include the uncertainty created by the following risks to estimates of the future cash flows. NB this list may not be exhaustive.

- Claim occurrence, amount, timing and development;
- Lapse, surrender, premium persistency and other policyholder actions;
- Expense risk associated with costs of servicing the contract;
• External developments and trends, to the extent that they affect insurance cash flows.
• Claim and expense inflation risk, excluding direct inflation index linked risk, since this is considered a financial risk.

For the risk adjustment associated with reinsurance held – see Chapter 9.

The risk adjustment for non-financial risk would not include the uncertainty created by the following:
• Operational risk (i.e., risk not driven by the future cash flow items above). Examples include legislative risk, reputational risk, business interruption / the risk of cyber attack etc.;
• Asset-liability mismatch risk;
• Price or credit risk on underlying assets.

In some instances, there may be interactions between financial variables and non-financial variables that impact expected cash flows, making the distinction between financial risk and non-financial risk less clear. For instance, policyholder behaviour may be influenced by investment performance where there are linkages between investment returns and credited rates / contractual values. In this instance, the expected cash flows reflect this influence. The risk of policyholder behaviour being different than what is reflected in estimates of the expected cash flows would be considered non-financial risk. A further example is spread compression risk due to earned / credited rate differences where crediting rates are discretionary. The risk of this discretionary spread compression being different than what is reflected in the estimates of expected future cash flows would again be considered a non-financial risk.

4.8. What is risk aversion?

Risk aversion is an entity’s reluctance to accept risk (variability and uncertainty), particularly as respects unfavourable outcomes. To overcome this aversion, entities typically expect compensation for bearing risk. The greater the risk aversion, the greater the expected compensation required. While it can be taken as a general truth that the expected compensation required increases as risk aversion increases, the relationship is not necessarily linear. For instance, the marginal compensation that an entity may require to accept marginal additional risk is likely to increase the closer the marginal additional risk brings an entity towards maximum levels of risk tolerance (i.e., risk aversion generally increases as one approaches the maximum levels of risk tolerance).

4.9. How can the actuary assess and express an entity’s risk aversion?

The entity’s board is usually responsible for its risk policy, including its policy on risk aversion. In some cases, the actuary may be able to draw on an explicit risk policy, such as that adopted by the entity’s Board, which would typically be developed in consultation with the entity’s Chief Risk Officer and / or enterprise risk committee.

In other cases, discussions with the entity’s board and management may be appropriate. Topics for discussion that the actuary may find useful include:
• comparison with similar entities in the market;
• discussion of stress scenarios, both short and long term;
• the entity’s underwriting and pricing policy and practices;
• the entity’s approach to self-assessment of solvency risk with respect to capital needs and capital management; and
• the entity’s reinsurance policy and practices.

4.10. What allowance should be made for risk diversification and what level of aggregation should be used?

The risk adjustment reflects in paragraph B88(a), inter alia, “the degree of diversification benefit the entity includes when determining the compensation it requires for bearing that risk”. Note the degree and structure of risk diversification are to be included within the entity’s assessment of compensation.

Paragraph B88(a) uses the term diversification, suggesting a bottom-up approach to determining the required compensation, but does not preclude a top-down approach. If an entity uses a top-down approach, the entity can determine the total compensation that it requires for bearing non-financial risk and then allocate or apportion it. For example, the entity may allocate its risk compensation to whatever level of subdivision is required for financial reporting purposes. With this process, the extent of aggregation of the business risks for which the entity determines its total required compensation for bearing risk is the equivalent of the extent of aggregation of business over which diversification is reflected.

This aggregation encompasses all of the insurance contracts that the entity elects to include in setting its compensation for bearing risk. For example, an entity may elect to aggregate all of the insurance contracts that it writes.

A practical issue arises when evaluating the risk adjustment for the insurance written on a gross basis, i.e., without regard to reinsurance ceded. In principle, the compensation required for bearing risk would typically first consider the net risk for the entity, with due consideration given to the entity’s use of reinsurance held as a financial resource available to the entity. Consequently, the entity’s risk aversion will implicitly reflect its views as respects its net risk. To meet the requirement in IFRS 17 to estimate the risk adjustment associated with reinsurance held, it is necessary to reflect the differences in risk on a net basis versus on a gross basis, but maintain the entity’s views regarding required compensation. The objective is to “represent the amount of risk being transferred by the holder of the group of reinsurance contracts to the issuer of those contracts” as required by paragraph 64.

In some cases, the gross risk measurement might be approximately proportional to the net risk measurement and therefore the gross risk adjustment can be estimated by using a simple scaling factor applied to the net risk adjustment. In other cases, there may be quantitative and qualitative aspects of the risk and uncertainty such that the reinsurance held provides a very effective means of risk mitigation. For example, the value to the entity from the risk mitigation provided by its reinsurance held may be significantly greater than a simple scaling factor proportional to a selected risk measure. In such cases, it may be
appropriate to consider other benchmarks or risk measures that are consistent with the entity’s risk aversion (reflecting that its risk is mitigated via reinsurance) and also to consider the entity’s estimate of its costs to retain, or replace, the reinsurance held.

If a bottom-up approach to risk adjustment is adopted, the total net required compensation for variability and uncertainty is an important check on the result of this process.

The risk adjustment may reflect the impact of diversification of non-financial risk across all of the insurance contracts that the entity selects. This may be the aggregation of all contracts to take account of all possible diversification benefits, or it may be at a lower level for sub-groups comprised of specific contracts or cohorts of business. The key consideration in making this choice is how the entity considers diversification in establishing the compensation it requires.

Where the entity consists of both a parent and subsidiaries, different perspectives have been put forward on how to reflect diversification in reporting at the group versus subsidiary level. One perspective is that the risk adjustment is set to be consistent across the group—that is, the risk adjustment at the subsidiary level should be the same as, and reflect the diversification benefits assumed at the Group level. Another perspective is that the diversification benefits assumed could be different at the Group versus subsidiary level if such an approach was consistent with the approach used by the subsidiary entity management to make its entity level decisions. Which of these perspectives should apply is a policy decision for the respective entities.

4.11. What allowance should be made for large and / or infrequent and / or atypical events?

The risk adjustment is intended to fully reflect all of the uncertainty and variability in insurance cash flows, incorporating allowance for all possible outcomes in proportion to their respective probabilities. This includes infrequent and atypical events in the tail of the distribution of outcomes. Where such tail events or combinations of events are not represented in the experience data, judgement may be needed as to how great an allowance is needed. Conversely, where such events are present, judgment may be needed as to whether they are over-represented.

In suitable cases, it may be possible to fit a probability distribution that makes due allowance for extremes, based on observed experience, but the suitability of the chosen probability distribution is also a matter of judgement. It is often helpful to model extreme outcomes separately from other events.

4.12. What allowance should be made for risk sharing mechanisms?

Risk sharing mechanisms may include:

- participation;
- investment linkage;
- deductibles and excesses;
- profit sharing;
• retrospective experience rating; and
• prospective experience rating schemes, such as no-claim discounts.

No allowance is likely to be made for prospective experience rating outside the contract boundary, as this does not relate to current contracts and is better regarded as part of the underwriting process for subsequent contracts.

Risk sharing arrangements can affect the contractual insurance cash flows between the insurer and the policyholder. Such cash flows may be contingent on insurance claims or other factors which may lessen the risk and variability of the entirety of the insurance cash flows. The risk adjustment will reflect all of these contract cash flows, with due consideration to the contingencies involved.

4.13. What is the compensation that the entity requires for bearing risk?

The compensation that the entity requires for bearing risk is a matter of judgement, which is ultimately exercised by the management of the entity and governed by the Board of the entity. In many cases, this will be informed by risk management expertise but, ultimately, the judgement is a Board responsibility, based on management (and possibly actuarial) advice.

Such judgements about compensation and risk are perhaps made regularly by entities in relation to the profit margin priced into their insurance policies. Examples of how such profit margins are expressed can be observed in a variety of ways, such as:

• an overall required profit margin on business written;
• a target rate of return or margin over risk-free on total assets, capital or equity;
• different profit margins on different classes of business; depending on perceived risk;
• a target probability which may be used for solvency assessment that losses will not exceed a given percentage of net assets; and
• an analysis of the net assets and margin over risk-free return required to support the total business, on a basis such as a target probability that those assets will prove adequate and a rate of return commensurate with that risk.

It is not, however, necessarily appropriate simply to apply the profit margin basis to estimate the risk adjustment. While a profit margin would seem to be a reasonable benchmark, in many cases there are considerations that go into selecting a profit margin that would not be consistent with the IFRS 17 measurement objectives for risk adjustments. For example, operational and asset-liability matching and investment risks that are not directly related to cash flows to the policyholder might be included in the profit margin but would not be considered in the risk adjustment. In addition, the criterion for risk adjustments is expressed as an amount which would make the entity indifferent between “risky” cash flows and fixed cash flows. Profit margins frequently reflect different objectives, such as desired market share and market competitiveness, policyholder dividend considerations, and pricing sensitivities, which may not be relevant considerations for the risk adjustment.
4.14. How should qualitative risk characteristics be reflected

Paragraph B89 requires that “...the risk adjustment shall reflect all non-financial risks associated with the insurance contract ..” and paragraph B91(d) that “the less that is known about the current estimate and its trend, the higher will be the risk adjustment...”. These provisions require that allowance for qualitative risk characteristics is to be incorporated into the risk adjustment. By their nature, incorporating such factors into the assessment of the overall level of risk requires judgement.

A first step is to assign a value to the level of risk and to assess the degree of correlation with measurable risks. In simple cases, it may be appropriate to assume that the risks are independent of one another, and can be approximated by combining the standard deviations as the square root of the sum of the squares. There are concerns that the analyses of the risk involved will provide an adequate basis for more sophisticated adjustments. However, if the qualitative risks are well enough understood, it may be possible to incorporate allowance for correlation and skewness effects.

Actuaries are often confronted with situations for which information to develop assumptions for risk, including probability models, is limited. This is most frequently the case with new markets, new risks, long duration risks, and risks involving extreme or remote events, but unanticipated circumstances (“unknown unknowns”) can arise almost anywhere.

There is no single appropriate approach to reflect qualitative considerations. However, IFRS 17 provides direction for each entity to choose one or more techniques that appropriately reflect the data, the information and the results from the models available, including the risk strategy of the management, and the extent of the uncertainty. It is important that the technique used appropriately captures the potential compensation for bearing the risk (For example, a simple technique, such as adding a margin based on the estimated standard deviation may not fully allow for the risk of very low frequency but high severity outcomes. A scenario testing approach might perform better, provided suitable extreme scenarios are included. Modelling using a suitably skewed probability distribution may be another approach.).

Both simple and complex techniques may be appropriate, depending on the nature of the uncertainty, the materiality of the uncertainty, and the structure of the underlying modelling available. For example, where uncertainty is material, and is characterised by a very low frequency and high severity risk profile and probability models are available, such a risk could be captured by introducing a state or regime switch into the model.

Since, by their nature, qualitative risks cannot be measured directly, the quantification effect is based largely on judgement. Where the impact of qualitative risks could be material, and since the responsibility for the risk adjustment lies with the entity, it may be desirable for the actuary to discuss these risks with the entity.

Qualitative risks are seldom symmetrical. Because of this, it may be appropriate to make an adjustment, based on judgement, to the risk adjustment solely on the basis of knowledge of the risks involved and any observed experience that could be relevant.
4.15. What disclosures and explanations are required?

Paragraph 93 states that “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 that contracts within the scope of IFRS 17 have on the entity’s financial position, financial performance and cash flows. …”

The disclosures required are set out in paragraphs 93-96. Paragraphs 97-132 set out the required “explanation of recognised amounts”.

For the most part, these disclosures relate to amounts that are inclusive of risk adjustments and are discussed in other Chapters. The specific requirements in respect of risk adjustments are:

- “For insurance contracts other than those to which the premium allocation approach described in paragraph graphs 53–59 or 69–70 has been applied, an entity shall also disclose reconciliations from the opening to the closing balances separately for each of: …(b) the risk adjustment for non-financial risk; …” [Paragraph 101].

- “An entity shall disclose the significant judgements, and changes in those judgements, that were made …(c)(ii)to determine the risk adjustment for non-financial risk …” [Paragraph 117]

- “An entity shall 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, it shall disclose the technique used and the confidence level corresponding to the results of that technique.” [Paragraph 119].

Where the PAA has been applied, the applicable paragraphs requiring explanation of recognized amounts are 98 – 100 and 102 – 105. Of these, risk adjustment for non-financial risk is mentioned in each of paragraphs 100 and 104.

4.16. What explanations and disclosures might be included in the actuary’s communications?

While there is no stated requirement in IFRS 17 that the risk adjustment will be determined by an actuary, the work products and input of actuaries are very likely to be relied upon to develop, review and maintain the risk adjustment values. An important objective of the actuary’s communications is to assist the entity in developing its IFRS 17 disclosures and to enable the Board and management to better understand the way in which the actuary has undertaken his or her work. Key elements of these communications, relative to risk adjustments, may include a discussion on:

- the background to the disclosures required;
- how the compensation the entity requires for bearing risk has been quantified;
- how the entity’s risk aversion has been assessed and incorporated in considering the entity’s required compensation for bearing risk;
4.17. What are appropriate methods to allocate risk adjustments calculated at a more aggregated level to a more granular level?

IFRS 17 does not require the risk adjustment to be directly determined at any specific level of granularity; however, to obtain appropriate fulfillment cashflows for each group of contracts the risk adjustment needs to be allocated at least to the group of contracts level for various purposes (e.g., CSM, liability for onerous contracts).

If the risk adjustment is initially calculated at a more aggregated level, any reasonable method that will lead to the same total risk adjustment, were the risk adjustment directly determined at the lower level of aggregation, is appropriate to more finely allocate the risk adjustment. Such methods reflect the key drivers of the risk adjustment calculation. For example, if the risk adjustment reflects components separately determined for insurance risk, policyholder behavior risk, and expense risk, the allocation methodology would use risk drivers that appropriately attribute the impact of each of these risks to the lower levels of aggregation.

Consideration could also be given to running more complex models at a higher level of aggregation (and perhaps less frequently) and then simplified into factor matrices to use at a more granular level in the valuation.

4.18. What are appropriate ways to estimate confidence levels for disclosure when not directly available from the risk adjustment calculations?

In order to determine confidence levels, it is necessary to be able to locate the value of the Fulfillment Cash Flow of a collection of insurance contracts on the probability distribution of the present value of the cashflows for the contracts. If that probability distribution is not explicitly derived as part of the valuation process, some method or model might be needed to estimate the percentiles of that combined portfolio distribution at the amount that reflects the risk adjustment. The extent of the analysis needed for such estimation is likely to require judgement.

For large collections of insurance contracts, there may be sufficient evidence about the tail of the probability distribution.
In other cases, the form of the probability distribution might be selected based on judgement and the parameters for that probability distribution might be selected by judgement based on what is considered appropriate for the purpose of this disclosure.

NB the sensitivity of the resulting confidence level to the chosen probability distribution increases as the confidence level increases.

The relevant part of the probability distribution may be defined in terms or two of more quantiles that straddle the Fulfillment Cash Flow based on evidence and judgements which would explain the values chosen for those quantiles.

4.19. What other considerations are relevant when estimating and communicating confidence levels?

Different actuaries providing advice on confidence levels for similar reserves for similar risks may reach very different conclusions depending on the assumptions and methodology followed and on the judgement applied.

External users are likely to place significant importance on the confidence level disclosure and compare entities to their peers. As a result, this is an area where the actuary can help management understand and communicate the issues and challenges related to this important estimate and the appropriate explanation associated with this disclosure.

Estimating the confidence level disclosure will depend on how well the aggregate probability distribution is understood. When the moments of the probability distribution can be estimated, the relative uncertainty related to such estimates increases with the order of the moment estimated. Consequently, there are risks associated with interpreting the confidence level disclosure with a false sense of precision in such estimates. This risk can be mitigated by providing a better understanding around the qualitative considerations involving the level of subjectivity and judgement involved in estimating the confidence level.

In determining the confidence level using a particular technical method there are additional considerations related to how well the method reflects the full range of outcomes, and whether the method used is stable over time, is fairly representative of ongoing conditions, and can be replicated.

As the degree of uncertainty (in the confidence level estimate) increases, the need for judgement increases and, with it, the need to better understand and communicate, to the entity, both the uncertainty and the way in which judgement has been exercised.

4.20. Should confidence level disclosure be done gross or net of reinsurance?

IFRS 17 does not specify whether the disclosure of a confidence level is intended to be on a gross or net-of-reinsurance basis. The entity’s reported risk adjustment is required on a gross level as a liability. If the entity has reinsurance held, the entity also separately reports the risk adjustment associated with reinsurance held. The entity’s net risk adjustment is not reported as a separate item. However, the estimation of separate confidence levels for disclosure that correspond to the gross risk adjustment (liability) and the reinsurance held risk adjustment (asset) may present significant technical issues and may not provide the relevant information intended.
The level of disclosure is likely to be determined by market practice.

4.21. What is the appropriate granularity for disclosure of confidence levels?

Paragraph 119 requires disclosure of the confidence level associated with the risk adjustment. The standard only requires one confidence level disclosure for the reporting entity, however, it is not prohibited to provide additional disclosure at a more granular level. The overall disclosure policy of the reporting entity is relevant to determining the approach to confidence level disclosure.

4.22. To what extent is it appropriate to use analyses and measurements made for other purposes, such as pricing, embedded value, regulatory reporting or capital modelling?

IFRS 17 does not mandate particular technique(s) to determine risk adjustments, nor does it specifically limit the techniques that may be used, or provide examples of appropriate techniques.

The primary requirement in the application guidance is that “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 present value as the insurance contract.” (B87)

While it may often be desirable to make use of analyses conducted for other purposes, the conclusions drawn from such analyses may not be transferrable. Such conclusions depend on the perspective and purpose for which they are required. Risk adjustments are set in a fulfilment perspective in comparison to expected values (e.g., central estimates or best estimates) that are required to represent unbiased mean values. This is not necessarily true of measurements set in other contexts. The underlying rationales of market, entry and exit values and of pricing are clearly different. This means that pricing and exit value assessments of the liability may not be appropriate ways to calibrate risk adjustments.

Internal capital models that are developed within regulatory frameworks (and/or for pricing purposes) may provide a good reference for how the entity views and assesses risk. Therefore, the techniques used to measure risk and develop risk adjustments for IFRS 17 can be compared against the techniques and measurements used under such other frameworks as a means to assess for reasonableness, and to potentially leverage the underlying analyses for both purposes. However, the resulting risk adjustments would be determined based solely on the IFRS 17 criteria.

Regulatory solvency capital adequacy models that align well with how an entity views and assesses risk may, similarly, be potentially leveraged in the development of appropriate IFRS 17 techniques to measure and assess risk. However, IFRS principles for the valuation of insurance contract liabilities are not based on the solvency requirements of an insurer, so they can only be leveraged to the extent they generally reflect how the entity views and
assesses risk. Having said this, regulatory capital adequacy requirements do place constraints on the entity, and are likely to influence its views.

A further complication is that both internal and regulatory capital requirements are there to cover all of the risks faced by the entity, while the risk adjustment in the Fulfilment Cash Flows excludes risks outside the insurance contract (such as operational, asset and asset-liability mismatch risks) and risks reflected through the use of market consistent inputs (see question 6.7). Even where regulatory minimum capital is built up in an additive structure, it does not necessarily follow that the insurance components of such a structure fully represent the insurance risks, since the underlying relationships are unlikely to be fully additive.

4.23. To what extent can different approaches be used to determine the risk adjustment within the same valuation?

There is no requirement to use a single model or approach for all the business or all the risks. An entity may use a mix or blend of methods to set risk adjustments across different businesses provided such an approach makes appropriate allowance for diversification and is done in a way that can be reasonably disclosed and explained to external auditors and is relevant to users (which is likely the biggest hurdle to a mixed model approach).

Consideration could be given to running more complex models at a higher level of aggregation (and perhaps less frequently) and then simplified into factor matrixes to use at a more granular level in the valuation.

4.24. What time horizon is used in measuring the risk adjustment?

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” is generally understood to mean the compensation required for bearing the non-financial risks associated with all cash flows within the contract boundary for the duration of the contract boundary.

4.25. Where the measurement of the risk adjustment utilises a separate capital measure, what time horizon is used for the capital measure?

The time horizon used for a capital measure may be different than the time horizon used in measuring the risk adjustment, without causing inconsistencies. For example, a capital measure may use a short time horizon (e.g., 1-year, with terminal provision). The measurement of Risk Adjustment may use, as input, a series of capital measures that each use a 1-year time horizon. For example, in the traditional “cost of capital” approach, the capital measure may be based on a short time horizon (using a 1-year horizon) for capital at a given point in time, then such capital measures would be projected for future time points over the contract boundary, and then each future point estimate would be multiplied by a cost of capital rate, and then discounted back to the measurement date.
Chapter 5 – Level of Aggregation

Before consulting this chapter, be sure to read the Introduction to this IAN, particularly the sections on References to IFRS 17, Materiality and Proportionality

5.A. What does this chapter address?

This chapter considers the level of aggregation / unit of account that needs to be considered when valuing insurance contracts within the scope of IFRS 17.

5.B. Which sections of IFRS 17 address this topic?

Paragraphs 14-24 provide guidance on this topic.

BC 115-139 also provides background on the subject.

5.C. What other IAA documents are relevant to this topic?

None
Overview

5.1. What is the purpose of aggregation?

IFRS 17 deals purely with insurance contracts and investment contracts with Discretionary Participating Features (DPF). In most instances it is likely to be impractical, however, for an entity to measure all insurance contracts at a contract unit level. Consequently, all insurance contracts in the scope of IFRS 17 are aggregated into portfolios and groups within portfolios on initial recognition and not reassessed subsequently (paragraph 24). In doing so, the IASB intends to limit the obscuring of information that would occur by offsetting onerous contracts in one group with profitable contracts in another (paragraph BC119).

5.2. What are the levels of aggregation?

In determining the level of aggregation, an entity identifies portfolios of insurance contracts. Each portfolio is divided into groups, which distinguish onerousness, and the entity aggregates individual contracts into these groupings. An entity cannot include contracts issued more than one year apart into the same group (paragraphs 16, 17 and 22). A summary of the levels of aggregation is presented in Figure 5.1 below.
5.3. At what level of aggregation are fulfilment cash flows required to be estimated?

When measuring groups of insurance contracts, an entity may estimate the expected present value of future cashflows, discount rates and the risk adjustment for non-financial risk at a higher (or lower) level of aggregation than the group or portfolio, provided 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 (paragraph 24). This is depicted in Figure 5.2 below.
5.4. Why is the level of aggregation important?

The level of aggregation determines the recognition and measurement requirements of IFRS 17 (paragraph 24). Groups will need to be tracked and measured throughout the lifetime of the contracts.

For many entities, the grouping exercise could have significant practical and operational issues in respect of the entity's administration, valuation and accounting systems.

Identification of Portfolios

5.5. What is a portfolio of insurance contracts?

A portfolio of insurance contracts is defined in paragraph 14 as “A portfolio comprises contracts subject to similar risks and managed together”. Each portfolio forms a partition of the total insurance business of the reporting entity. Accordingly, each contract is at inception allocated to one portfolio, or may, under certain circumstances, be apportioned across multiple portfolios if the contract covers different types of risks and these risks are unbundled.

5.6. What does subject to similar risks mean?

No clear definition of similar risks is given in the Standard. Paragraph 14 states that contracts within a product line would be expected to have similar risks, and consequently could be considered as a portfolio if they are managed together.

5.7. What does managed together mean?

Again, there is no clear definition in the Standard for this term. Hence judgement is required on what constitutes managed together.

From a practical perspective, the considerations relating to subject to similar risks noted above will require a level of granularity in assignment of portfolios that, in many cases, could result in portfolios that are naturally managed together.

It is expected that the determination of the portfolio level will vary between entities, due to different sizes and complexity of entities, as well as the different ways in which business is
managed. A practical approach to determining the portfolios for an entity might rely on the internal management reporting systems.

An entity might change how it manages its business over time and, as a result, the number of portfolios might change over time. This is an anticipated response under the Standard, although it does not necessarily affect the number of groups as historical groups do not change and groups are a sub-set of the portfolios.

5.8. Can multi-peril (or multi-benefit) products be aggregated in the same portfolio?

Peril aggregation is a common feature of general insurance products. Benefit combination is also a common feature of life insurance products. If the contracts are subject to similar risks and managed together, then it could be concluded that multi-perils (or multi-benefit) contracts can be aggregated into portfolios.

Also, relevant may be the following references and TRG papers relating to the separation and combination of insurance contracts:

- Paper AP01 for the February 18, 2018 TRG meeting and discussion thereof which provide guidance on when it may be appropriate to separate components of insurance contracts.

- Paragraph 9 and paper AP01 for the May 18, 2018 TRG meeting and subsequent discussion which provide guidance on the combination of insurance contracts, and

Additionally:

- BC119 states that aggregation set by regulators serves a different purpose than aggregation for financial reporting; and

- peril type aggregation used for actuarial modelling of reserving would not necessarily be a suitable basis for aggregation given its alignment with solvency and valuation requirements.

This supports the bundling of perils within portfolios and groups from a practical standpoint, however if the contracts cover multiple perils or benefits then separation of these components may first be required. The attribution of premium income to multiple peril groupings could be challenging, particularly if those perils were not priced explicitly within an additive pricing structure. This complexity might lead to potential inaccuracies in financial reporting, notably the consideration of whether the contract groups are onerous, Materiality of the potential inaccuracies in financial reporting are a consideration for actuaries.

Although not explicitly prohibited or prescribed in IFRS 17, it is unlikely that individual multi-peril contracts would be split into separate portfolios for the purposes of measurement under IFRS 17, purely due to their multi-peril nature. This is discussed in paper AP01 for the
February 18, 2018 TRG meeting where the intention is clearly stated that a contract with legal form of a single contract would generally be considered a single contract in substance. There might be circumstances where it is not the case. The TRG observed that:

“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.” (TRG Summary Feb 18 paragraph 7(b)(ii)).

5.9. Can separate types of risk be split out from a contract?

Following deliberations at the February 2018 and May 2018 TRG meetings it is generally agreed that the lowest unit of account is the contract. There is a presumption that a contract with the legal form of a single contract would generally be considered as a single contract in substance.

However, there might be certain facts and circumstances where legal form does not reflect the substance. For example, where transactions that are typically written as separate contracts have been bundled together as one legal contract for customer convenience or where a set or series of insurance contracts with the same or a related counterparty can be treated as a single contract. This will require careful consideration of the level of interdependencies between the different components such as shared deductibles and limits and where the lapse or termination of one component results in the termination of the whole contract.

5.10. When is a contract allocated to a portfolio of insurance contracts?

Practically, at the same time as groups are defined (see question 5.13)

5.11. Are portfolios of insurance contracts fixed for all times?

Since the definition of a portfolio refers to a purely business criterion, managed together may change over time. IFRS 17 requires a current assessment for any new business written, which means that the portfolios for an entity might change over time for new business or renewal written.

5.12. Is the entity free to refine the partition of the business in force?

No. A contract is required to be assigned to a group (which is a subset of portfolio) at initial recognition of the contract.

Organisational changes in the way contracts are managed together may require further portfolios to be created for new business and / or renewed business (where this is accounted for as a new contract), but does not affect the allocation of already existing contracts which remain in their assigned groups.

Partitioning into Groups
5.13. What is a group of insurance contracts?

A group of insurance contracts is a further partition of a portfolio according to when the contract is written and expected profitability (paragraph 16 and Appendix A). Hence a "group" is a set of new business or renewal contracts, which are issued no more than 12 months apart, to be measured together. It is a sub-set of a "portfolio". Each group is sometimes referred to as a ‘unit of account’ (though this term is not used in IFRS 17).

5.14. When is an issued contract grouped?

Paragraph 25 specifies that a group of insurance contracts is recognised at the earlier of the date when insurance coverage commences or the date the initial premium becomes due or if the group of contracts is onerous, when the group becomes onerous. New contracts are added to the group as they are written, subject to them being issued no more than a year apart (see below).

An entity shall establish the group at initial recognition and shall not reassess the composition of the groups subsequently (paragraph 24), except in the cases of a specified contract modification (paragraphs 72 and 76). This applies even if contracts within a group, or the group as a whole, are subsequently found to be onerous when they were not at initial recognition.

Question 5.11 above refers to portfolios changing over time if the business manages its insurance contracts in different ways.

Significant contract modifications are covered in more detail within Chapter 14.

5.15. What is the meaning of the limitation to contracts being issued no more than one year apart at inception?

Paragraph 25 specifies the circumstances in which a group of insurance contracts is first recognised. The issue date of an insurance contract is the earlier of the beginning of the coverage period and the date the premium becomes due. An entity shall not include contracts issued more than one year apart in the same group (paragraph 22). This refers to the date of issue of the contract being recognised under IFRS 17, which is not necessarily the same as date the contract was initially written, as due to the application of contract boundary, the renewal of a long-term contract may be treated as creating a new contract under IFRS 17.

Contracts that legally bind the insurer for only a short period (e.g., most general insurance contracts) may get reissued at the renewal date. This will be a new contract under the standard and hence the renewal date forms the issue date.

A complication for general insurers is that cohorts based on accident year may not necessarily correspond with contracts issued less than one year apart.
There is no restriction against containing shorter issue periods than this and this requirement does not require that the one-year period coincides with accounting periods or calendar years.

For contracts that bind the insurer for longer periods (e.g., most life insurance contracts) it is more complex. These contracts might be guaranteed renewable and the contract legally continues subject to payment of the renewal premium due. However, although the contract legally continues, IFRS 17 may treat the renewal date as the contract boundary and the renewal as creating a new “contract” for IFRS 17 purposes separate from the exiting contract. In which case, the underlying policy contract may be treated as multiple "contracts" for IFRS 17 purposes over its life (paragraph 35). In this case "issue" date refers not to the original date of commencement but to date of the renewal that incepted the contract under IFRS 17.

5.16. How is a contract allocated to a group?

Under the GMA and VFA, each contract to be grouped is assigned to one of at least three categories:

a. Onerous (loss-making) at initial recognition;

b. no significant possibility of becoming onerous at initial recognition; or

c. any remaining contracts in the portfolio into one or more groups.

In practice, individual contract assignment might be possible, but insurers may not attempt to assess the risk exposure in full detail and will therefore choose a certain level of differentiation of contracts corresponding with such elements, such as differentiation of risk and pricing. Reasonable and supportable information is the terminology used in the standard. Paragraphs 17 and BC 129 highlight the IASB’s intention that the objective of assigning contracts to the three categories mentioned above 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.

Under the PAA, the entity assumes contracts in the portfolio are not onerous at initial recognition unless facts and circumstances indicate otherwise (paragraph 18).

5.17. How might grouping be different for contracts with direct participation features?

When considering how to apply the grouping for contracts with direct participation features, it is important to consider how areas in respect of mutualisation between contracts and the impact of participation might affect the allocation to groups. This is the case in respect of both considering whether contracts are subject to similar risks (portfolio allocation) and the split in respect of profitability.
IFRS 17 has paragraphs specifically on mutualisation (paragraphs B68-B71 and B103). These allow that, in calculating the value of expected cash flows, an allowance can be made for cash flows originating from contracts in other groups, not just cash flows arising solely from contracts in that group. Similarly, when doing this calculation, cash flows implicitly transferred to other groups are to be excluded. Note that this ability assumes that profit from the donor group has not already been released.

Because of the allowance for cash flows to be transferred between groups, what would otherwise be an onerous group will potentially be profitable. Similarly, if a group is potentially about to become onerous, then a transfer from a profitable group is expected to prevent that.

One might even argue that there is no point in sub-dividing groups by year of issue, because cash flows from a more profitable cohort could be transferred to a less profitable cohort. The ability to transfer between cohorts means that the profitability for business written in separate periods should be less differentiated. There may bring particular operational challenges when determining the groups in respect of businesses where new policies share in profits generated by the existing book and vice versa.

However, the IASB has stipulated that groups be differentiated by not containing contracts issued more than one year apart. This is because the IASB expects that profitability would vary over time, and at the extreme one cohort might be onerous while another is profitable. The IASB did not want this information obscured by offsetting onerous contracts in one group with profitable contracts in another (see paragraph BC119 and the last two sentences of paragraph BC136).

The IASB therefore, still felt that subdivision by year of issue was appropriate, even where there were transfers of cash flows between groups (see paragraph BC138). The requirement in paragraph 22 is that an entity shall not include contracts issued more than one year apart.

Paragraph BC138 notes that the amounts to be reported for each group are specified, but it is not necessary to calculate amounts at a group level, so calculation could presumably be undertaken at a higher level and the results then allocated to each group – this is important in the context of mutualisation, as IFRS 17 assumes that the amount of any transfers will be specifically known, whereas the actual quantification is likely to vary over time as facts and circumstances change.

5.18. How might the pool of underlying items affect portfolios?

As explained in 5.5 ‘portfolios’ are defined as contracts subject to similar risks and managed together. It will be up to the entity to determine how risks and management are affected by the pool of underlying items.
For example, it might be determined that contracts are subject to different risks, and hence be in different portfolios, notwithstanding that they participate in the same pool of underlying items. Conversely, it may be that a single portfolio covers contracts that participate in multiple pools of underlying items.

5.19. How are contracts added to an existing group?

The establishment of a group can be a process that spans up to a year. The original classification of the group determines the allocation of new contracts during that period. If the expected profitability of an open group changes during that period, it might be appropriate to close the open group and open a new one if new contracts are added that differ in profitability level.

5.20. What is reasonable and supportable information when determining whether a set of contracts can be considered as a group?

Paragraph 17 indicates consideration should be given to the availability of reasonable and supportable information to justify the grouping of contracts. In the absence of such information, an entity shall determine the group to which the contracts belong by considering individual contracts.

Reasonable and supportable information could be considered to be readily available internal management and reporting information. Examples might include policy disclosure statements, valuation reports, pricing reports or other key profitability metrics presented to senior management or the Board of Directors.

Where the entity can reasonably undertake a measurement approach at an individual contract level, this would also enable a grouping assessment to be made.

5.21. What is the difference between no significant possibility of becoming onerous and other non-onerous contracts?

Paragraph BC 130 discusses the intent of this separation in a limited manner.

Internal guidance might be created by an entity that specifies the details of the metrics that are required to determine whether contracts fall into the no significant possibility group. The approach is likely to vary across entities, given the judgmental nature of this determination.

5.22. Does the liability for incurred claims need to be separated or identified by group (portfolio, underwriting year, level of onerousness)?

Paragraph 40 stipulates that:

The carrying amount of a group of insurance contracts at the end of each reporting period shall be the sum of:

(a) the liability for remaining coverage [...] and
(b) the liability for incurred claims, comprising the fulfilment cash flows related to past service allocated to the group at that date…

It is also noted that each group is a unit of account.

In practice though, it is anticipated that the outstanding claim valuation could be carried out at a different level of aggregation than the defined groups, then allocated down or aggregated up to the adopted unit of accounts. Paragraphs 24, 33 and 40 make it clear that allocating the fulfilment cash flows to groups from a higher level of aggregation, is quite acceptable for any type of valuation activity.

5.23. What happens if the interim or financial year end cut short the grouping year? Is the reported weighted discount rate restated allowing for the remaining months?

An entity may add contracts to a group, as long as they are not issued more than one year apart from any other contracts in the group. As contracts are added to a group, this may result in a change in the weighted-average discount rates at the date of initial recognition for the group. As indicated in paragraph 28, these revised discount rates are applied from the start of the reporting period in which the new contracts are added to the group. See Chapter 3, (How is the average locked-in curve determined for a group of contracts?) where various options are discussed to calculate the weighted average discount rate.

Careful consideration will be needed in respect of this paragraph when changing the weighted discount rate.

Further Disaggregation

5.24. Is it appropriate to determine groups on a more granular level than prescribed?

There are no constraints on refinement of groups beyond the minimum level prescribed (paragraph 21).

5.25. Can a group comprise of a single contract?

Yes, a group can comprise a single contract if that is the result of the grouping exercise (paragraph 23).

Regulatory Constraints

5.26. How does community rating and legislated limitations on use of underwriting variables impact grouping?

Where law or regulation specifically constrains the entity’s practical ability to set a different price or level of benefits for policyholders with different characteristics then those characteristics can be ignored for allocating policies between groups. Therefore, if a particular characteristic that is restricted would result in policies being split between onerous and other allocations, this characteristic can be ignored. The exemption cannot be applied by analogy to other items (paragraph 20).
An example would be the gender-neutral pricing regulations in Europe, where because of the legislation males and females would be included in the same group even if there is statistical evidence of differences in risk. Another example is age, gender and pre-existing conditions in health insurance which are restricted from being used for pricing by legislation and would usually result in some policies being onerous based on current prices. In these circumstances policies that would or wouldn’t be onerous due to these characteristics may be grouped together.

5.27. How should one consider regulatory pricing constraints?

The exemption in paragraph 20 applies only when 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 categorisation would therefore be applied either to the portfolio as a whole, or groupings excluding the regulatory or legal constraints. Care needs to be taken in determining the extent of the legal or regulatory constraint, and delineating it from business decisions (see e.g., paragraphs BC133-BC134).

Other Questions

5.28. How are reinsurance contracts aggregated?

The entity accounts for reinsurance contracts held separately from the underlying insurance contracts to which it relates. Entities apply the aggregation requirements in paragraph 61 to “divide portfolios of reinsurance contracts held applying paragraphs 14–24, except that the references to onerous contracts in those paragraphs shall be replaced with a reference to contracts on which there is a net gain on initial recognition. For some reinsurance contracts held, applying paragraphs 14–24 will result in a group that comprises a single contract”.

Further discussion is presented in Chapter 9 – Reinsurance.

5.29. What mismatches might arise?

The principle of IFRS 17 (paragraphs B66(b) and explained in BC298) is to separate the underlying gross liabilities from any associated reinsurance held. This means, for example, a contract which is onerous at inception on a gross basis would still be considered onerous and accounted for as such even where 100% of this risk is ceded to another party on an original terms coinsurance basis. In this example, the reinsurance held asset would not offset the impairment on the gross liability (i.e., asymmetric accounting, with the practical consequence of a day one loss from the gross liability impairment offset by income from the reinsurance ceded asset over the lifetime of the reinsurance contract).

The VFA cannot be applied to reinsurance held business, even if it is applied to the underlying insurance contracts. See chapter 9.
5.30. What are the implications of aggregation for presentation and disclosure?

An entity is required to present income or expenses from reinsurance contracts held separately from the expenses or income from underlying insurance contracts issued (paragraph 82).

Paragraph 38 requires the separate disclosure of the groups of contracts that are issued as assets and that are issued as liabilities. Groups of contracts in a liability position are those where the total insurance contract liability is positive. Groups of contracts in an asset position are those where the total insurance contract liability is negative.

Further discussion is presented in Chapter 15.

5.31. How are business combinations and portfolio transfers treated?

On acquisition of a portfolio or set of contracts paragraph B93 applies. The acquirer reassesses the groups using paragraphs 14-24 to identify the groups as if they had been issued on the acquisition date. As the contracts would all have the same acquisition date the requirement around issued less than 12 months apart would no longer be applicable. Illustrative example 14 from IFRS 17 Illustrative Examples shows the accounting for this.

A business combination will also require additional considerations in respect of the portfolios and groups to which these contracts belong. The portfolios that were split into groups based on profitability may have changed from the original entity.

When purchasing an entity, groups are assessed at the date of the business combination date (paragraph B93). However, for the original entity the assessments would remain as previously assessed and based on the original application of paragraphs 14 to 24. This will lead to different treatments between the entity and its parent group accounts with non-alignment of the aggregations.

For intra group transfers of business, if it is assessed as a transfer of business which is not an IFRS 3 business combination paragraph B93 does not apply. (This was agreed at the June 2018 IASB meeting).

Further discussion is presented in Chapter 11.

5.32. What exceptions are allowed at transition?

This will depend on which transition method is being used to measure the group of insurance contracts. Regardless of the transition method, once adopted, groups are fixed at transition and contracts remain in the same group thereafter.

If a full retrospective approach is adopted, as per paragraph C3, there are no exceptions and business written up to transition is grouped applying IFRS 17 retrospectively as if it had always applied.
If the modified retrospective approach is applied, as per paragraphs C8 and C9, the identification of groups of insurance contracts can be carried out with the information available at the transition date. Also, groups can include contracts issued more than one year apart. However, this modification can only be used to the extent that an entity does not have reasonable and supportable information to apply a retrospective approach. If the entity does have the information to make the split by portfolio/group for a particular group this information should be used.

If a fair value approach is adopted, as per paragraph C23, it is permitted (but not required) to include in a group contracts issued more than one year apart. You can only divide into groups issued within a year, or less, where you have reasonable and supportable information to make the division. The difference here is that whereas for the other two approaches you must make the divisions if you have the information to do so, for the fair value approach you are allowed (but not required) to make the divisions if you have the information to do so.

Further discussion is presented in Chapter 12.
Chapter 6 – Contractual Service Margin and Loss Component

Before consulting this chapter, be sure to read the Introduction to this IAN, particularly the sections on References to IFRS 17, Materiality and Proportionality

6.A. What does this chapter address?

This chapter provides information about the contractual service margin (CSM) – what it is, how it should be determined and how it might change because of a range of factors – and the treatment of the loss component of “onerous contracts”.

6.B. Which sections of IFRS 17 address this topic?

Paragraphs 38-39, 43-46 47-52 and B96-B100 provide guidance on this topic.

BC218-BC226, BC228-BC237, BC270-BC275 and BC277-BC287 also provide background on the subject.

6.C. What other IAA documents are relevant to this topic?

None
Overview

6.1. What is the purpose of the CSM?

The CSM is defined in Appendix A of IFRS 17 and represents the unearned profit the insurance entity will recognise as it provides services under the insurance contracts in a group. The CSM is a component of the insurance contract liability for a group of contracts.

It is measured at initial recognition for a group of contracts as the excess (if any) of the expected present value of cash inflows over cash outflows, within the boundary of the contract (including acquisition costs), after adjustment for non-financial risk.

If there is no excess of inflows over outflows at inception, the contract is onerous, no CSM is established and a loss component is calculated at the time of initial recognition.

Thereafter the CSM is rolled forward with interest accrual, adjustments for some experience items, cash flow estimates and risk. The loss component is allocated on a systematic basis in accordance with paragraph 50. The CSM is then released based on coverage units representing the service provided in the period and that now expected to be provided in the future.

This means that while the initial determination of the CSM for the group is a prospective calculation, thereafter it is primarily a retrospective calculation or roll forward.

The CSM reflects the IASB’s view that profit on insurance contracts should only be recognised as service is provided, consistent with IFRS 15 (see paragraphs IN7 and BC18) and not on day of policy sale.

Measurement on Initial Recognition

6.2. How is the CSM determined at initial recognition?

The CSM for a group of insurance contracts is established at initial recognition to offset any profit that may arise from just considering the fulfilment cashflows. The fulfilment cash flows include expected future cash outflows and inflows as well as the risk adjustment for non-financial risk and any pre-coverage cash flows. Therefore, at initial recognition, the CSM considers all contractual cash flows (future and past) within the contract boundary.

In the case of a profitable contract, the outcome of measuring all cash flows should be negative (total cash outflows minus total cash inflows). This asset is eliminated at contract inception by the creation of the CSM as an additional component of the liability of the group of insurance contracts. However, pre-coverage cash flows can impact the amount actually recognised on the balance sheet (see question 6.3). The outcome in the case of an unprofitable contract is discussed in question 6.4.

Other than in the case of reinsurance the CSM is subject to a minimum of zero.
There is no difference in the calculation of the CSM at inception for groups of insurance contracts without direct participation features and those with direct participation features.

The CSM at initial recognition and subsequently is determined at the level of the group of insurance contracts (i.e., the CSM does not need to be calculated at individual contract level).

6.3. What are pre-coverage cash flows?

In this chapter, pre-coverage cash flows include contractual cash flows relating to the contract that were paid / received by the insurer before the recognition date of the contract. The recognition date determines which cash flows are “pre-coverage” and which are not. Examples of pre-coverage cash flows may include:

- Premiums under the contract;
- Commissions spent due to contractual obligations with an intermediary in response to writing the contract; and
- Cost arising during the application and underwriting process (underwriting cost) and issuance cost.

Pre-coverage cash flows include any insurance acquisition cash flows for which an asset or liability is held prior to the recognition of the group that gave rise to them (see paragraphs 27 and 38). Further, this includes both cash flows that are directly or indirectly allocated to a contract e.g., acquisition cost spent without success, provided they are directly attributable at a portfolio level.

Paragraph 25 states that the recognition date of the contract is the earliest of the following:

- the beginning of the coverage period of the group of contracts;
- the date when the first payment from a policyholder in the group becomes due; and
- the date when the group becomes onerous for, a group of onerous contracts.

6.4. Can the CSM be negative at initial recognition?

Except in the case of reinsurance (see chapter 9 on reinsurance), the CSM cannot be negative and, when the calculation indicates a negative value, is instead set to zero. This results in a loss being reported equal to the amount by which the CSM otherwise would have been negative.

The negative balance is referred to as the loss component (see questions 6.26 – 6.29 on onerous contracts).
Subsequent Measurement: Contracts without Direct Participation Features

6.5. What changes are recognised in the CSM for contracts without direct participating features?

Paragraph 44 outlines how the CSM for a group of insurance contracts without direct participating features moves over time. It is calculated as follows:

\[
\text{CSM at the start of the reporting period} \\
\quad \text{plus the effect of any new contracts added to the group (see question 6.6);} \\
\quad \text{plus the value of interest accretion (see question 6.7);} \\
\quad \text{plus the changes in fulfilment cash flows relating to future service (see questions 6.8 – 6.11);} \\
\quad \text{plus the value of currency exchange differences; and} \\
\quad \text{less the amount recognised as insurance revenue because of the transfer of services (see questions 6.12 – 6.20)} \\
\]

\[= \text{CSM at end of the reporting period.}\]

6.6. What is the effect of any new contracts added to the group?

For any new contracts added to a group of insurance contracts during the reporting period, the entity includes only contracts recognised during the reporting period. New contracts can be added to the group after the end of the reporting period (subject to all contracts in the group being issued no more than one year apart), in accordance with paragraph 28.

6.7. What interest rate is accreted on the CSM?

Interest is accreted on the carrying amount of the CSM during the reporting period using the discount rate applied on initial recognition to reflect the time value of money (paragraphs 44(b) and B72(b)). This discount rate is applied to nominal cash flows that do not vary based on the returns of any underlying items. For further details on determining discount rates see Chapter 3.

6.8. Which changes in fulfilment cash flows qualify for adjusting the CSM?

Paragraph 44(c) states “the CSM is adjusted for the changes in fulfilment cash flows relating to future service as specified in paragraphs B96–B100, except to the extent that:

\begin{itemize}
  \item such increases in the fulfilment cash flows exceed the carrying amount of the contractual service margin, giving rise to a loss (see paragraph 48(a)); or
  \item such decreases in the fulfilment cash flows are allocated to the loss component of the liability for remaining coverage applying paragraph 50(b).\end{itemize}
Table 6.1 summarises which components underlying the fulfilment cash flows qualify for adjusting the CSM under the Core Requirements for without direct participation contracts.

**Table 6.1: Which changes in fulfilment cash flows qualify for adjusting the CSM?**

<table>
<thead>
<tr>
<th>Item</th>
<th>Unlock CSM?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in present value of cash flows related to future coverage and other services due to:</td>
<td></td>
</tr>
<tr>
<td>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 locked-in discount rates (paragraph B96(a))</td>
<td>Yes</td>
</tr>
<tr>
<td>Changes in estimates of the present value of the future cash flows in the liability for remaining coverage (e.g., assumption changes), measured at the locked-in discount rate (paragraph B96(b))</td>
<td>Yes</td>
</tr>
<tr>
<td>Differences between the actual and expected investment component paid in the period, measured at the locked-in discount rate (paragraph B95(c))</td>
<td>Yes</td>
</tr>
<tr>
<td>Contract holder info changes</td>
<td>Yes</td>
</tr>
<tr>
<td>Contract feature changes</td>
<td>Yes</td>
</tr>
<tr>
<td>Change in value of underlying items, if applicable</td>
<td>No</td>
</tr>
<tr>
<td>Risk adjustment for non-financial risks that relate to future service (paragraph B96(d))</td>
<td>Yes</td>
</tr>
<tr>
<td>Change in estimates that do not relate to future service:</td>
<td></td>
</tr>
<tr>
<td>Time value of money and financial risks (paragraph B97(a))</td>
<td>No</td>
</tr>
<tr>
<td>Change in estimates of fulfilment cash flows in the liability for incurred claims (paragraph B97(b))</td>
<td>No</td>
</tr>
<tr>
<td>Experience differences on current period cash flows (paragraph B97(c))</td>
<td>No</td>
</tr>
</tbody>
</table>
6.9. What is the experience investment component?

If, due to actual experience differing from expected experience, an investment component of the contract, i.e., an amount to be repaid to the policyholder under all circumstances, is not repaid in the current period, it will be repaid in future. Since this repayment was not originally included in the estimate of future cash flows, the estimate is increased by the present value of the future repayment at a later estimated repayment date.

A change in the estimate of such future cash flows adjusts the CSM (paragraph B96 (b)), i.e., decreases it by the present value of the future repayment of the investment component, applying the locked-in rate according to paragraph B72 (c).

Except for amount resulting from the discounting effect, the adjustment is reversed by a second adjustment, adding the difference between the investment component expected to be paid in the current period and the one actually paid, i.e., none, to the CSM (paragraph B96 (c)).

The opposite bookings apply if an investment component is repaid in the current period although it was expected that it would be repaid in a future period.

6.10. How are changes in the risk adjustment for non-financial risk reflected in CSM?

The CSM should be adjusted for changes in the risk adjustment for non-financial risk relating to services provided in future periods (paragraph B96(d)), subject to the condition that the CSM should not be negative. Changes in the risk adjustments for non-financial risk relating to coverage and other services provided in the current or past periods should be recognised in profit or loss.

The entity can disaggregate the change in risk adjustment for non-financial between the insurance service result and insurance finance income or expenses (paragraph 81). If the entity does not disaggregate in this way, then the entire change in risk adjustment is disclosed as part of the insurance service result.

The CSM is not affected by the approach adopted for presentation.

6.11. Does a change in the discretionary cash flows paid to policyholders during the reporting period for an insurance contract without direct participation features change the CSM?

Yes, if the entity has discretion over the cash flows to be paid to policyholders for insurance contracts without direct participation features, then a change in the discretionary cash flows is regarded as relating to future service, and adjusts the CSM (paragraph B98).

To determine how to identify a change in discretionary cash flows see paragraphs B98-B100.

Transfer of Services
6.12. How is the transfer of services determined?

The amount of CSM recognised in profit or loss for a group of insurance contracts in each period reflects the services provided under the group of insurance contracts in that period (see paragraphs 44(e), 45(e) and 66(e) and B119).

The amount of the CSM for the group at the end of the period, before allowing for the transfer of services, is after interest accretion, adjustment for changes relating to future service for cash flow estimates, premiums received and risk adjustment; investment component experience etc.

The entity allocates the CSM at the end of the period equally to each coverage unit (see question 6.13) provided in the current period and those expected to be provided in the future within the contract boundary, and recognises in profit or loss the amount allocated to the coverage units provided in the current period.

6.13. What is a coverage unit?

The coverage units establish the amount of the CSM to be recognised in profit or loss for services provided in the period. Coverage units reflect “the quantity of the benefits provided under a contract and its expected coverage duration” (paragraph B119(a)).

Aspects of IFRS 17 relevant in interpreting coverage unit are:

The coverage period is defined in IFRS 17, Appendix A as:

“The period during which the entity provides coverage for insured events. This period includes the coverage that relates to all premiums within the boundary of the insurance contract.”

The insured event is defined as:

“An uncertain future event covered by an insurance contract that creates insurance risk.”

The insurance risk is defined as:

“Risk, other than financial risk, transferred from the holder of a contract to the issuer.”

The application guidance (paragraphs B7-B32) discusses what constitutes insurance risk.

The recognition of CSM in insurance revenue as being related to the transfer of services (paragraphs 44 and 45):

“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.”
Paragraphs BC279-BC282 set out the IASB’s thinking and rationale for the release of the CSM and the use of coverage units for this purpose. In particular, the following were discussed and rejected by the IASB as the basis for release of the CSM:

a) pattern of expected cash flows (BC279(a));
b) the change in the risk adjustment caused by release from risk (BC279(a));
c) when the returns on investment components occur even where this drives total expected fee (BC280); and
d) release based on services other than insurance service (Last sentence of BC280).

A discussion about how to determine the quantity of benefits in an insurance contract when determining the coverage units of a group of contracts was discussed initially at the IASB’s February 2018 TRG (paper AP05) and considered further and in more depth at the IASB’s May 2018 TRG (paper AP05 and IASB TRG Meeting Summary). It was observed that:

IFRS 17 established principles, not detailed requirements, and detailed requirements would not work appropriately in all cases;

determination of coverage units is not an accounting policy choice, but requires application of careful judgement and consideration of the facts and circumstances to best achieve the principle of reflecting the services provided in each period;

the analysis of the examples discussed at the May 2018 meeting reflects the fact pattern of each example and does not necessarily apply to other fact patterns;

In considering how to achieve the principle, it was observed by the TRG members that:

a) lapse expectations are included to the extent they affect expected duration of coverage;
b) the different levels of service across periods needs to be reflected in determination of coverage units;
c) the quantity of benefits is determined from the policyholder perspective not the quantity of benefits expected to be incurred by the insurer;
d) a policyholder benefits from the insurer standing ready to meet valid claims should the insured event occur, hence the quantity of benefits relates to amounts that can potentially be claimed;
e) different probabilities of insured events across periods do not of themselves affect the stand-ready quantity of benefit provide to a policyholder, but where there are different types of insured events, their different probabilities might affect the stand-ready benefit provided by the insurer; and
f) particular method(s) are not specified by IFRS 17 and different methods may achieve the objective of reflecting the service provided in each period.

6.14. What service should be reflected in coverage units?

The IASB’s May 18 TRG considered, for contracts with direct participation features, the question of what services should be reflected in coverage units (e.g., purely insurance or insurance and investment) and the staff analysis concluded that:

IFRS 17 identifies only direct participation contracts as providing both insurance and investment services;

the reference to services in paragraphs 45 and B119 relate to insurance and investment service;

the reference to quantity of benefits in paragraph B119(a) relates to both insurance and investment services;

the reference to expected coverage duration in paragraph B119(a) relates to the duration of insurance and investment services; and

it is necessary, given the tight link of the coverage period to the provision of coverage of insured events in IFRS 17, to make a narrow amendment to clarify that, for direct participation contracts, the coverage period relates also to the provision of investment services.

Members of the TRG generally did not agree with the view that investment service was only present for direct participation contracts, and argued that insurance contracts without direct participating features can have investment components but cannot provide investment services, only insurance services. Profits are derived from investment components, but they can only be recognized in proportion to providing insurance services.

It is worth bearing in mind, that for stand-alone investment contracts with discretionary participation features, the coverage units are based on the investment service, and hence when the returns on the underlying items occur. For contracts that are measured using the VFA, coverage units can reflect investment as well as insurance services.

The way in which this is determined will need to be considered.

6.15. Are there examples available of coverage units?

The appendices of the IASB’s May 2018 TRG paper AP05 contain a large number of examples and the paper contains the IASB staff’s analysis of potential views of what coverage unit means in the context of specific facts and circumstances. These might be
helpful in aiding understanding but only in the context of the specific set of facts and circumstances outlined in the paper.

6.16. Which proxies (e.g., premium and passage of time) can be used as coverage units?

The following methods may be reasonable proxies depending on the facts and circumstances (this is a non-exhaustive list).

(i) Straight line allocation over time but reflecting the expected number of contracts in the group.

(ii) Use of maximum contract cover in each period.

(iii) Use of cover amounts for which the policyholder could validly claim each period should insured event occur.

(iv) Use of premiums, but not if they:
   a) are receivable in different periods to the insurance services; or
   b) reflect different probabilities of claim for the same insured event in different periods rather than different levels of stand-ready service; or
   c) display different levels of profitability in contracts rather than the stand-ready service.

6.17. How do you deal with multiple benefits on a single contract?

Alternative approaches which may be helpful when dealing with multiple benefits on a single contract are outlined below (this is not an exhaustive list).

- Determine coverage units based on the individual benefit components separately and adjust the CSM according to the recognition of all relevant coverage units during the period.
- Consider whether a coverage unit reflecting the characteristics of all benefits can be determined.
- Consider whether the contracts can be separated into components for the purposes of measurement. The TRG covered considerations relating to the separation of insurance components during its February 2018 meeting.

6.18. Can coverage units be calculated net of reinsurance?

No. As underlying business and reinsurance are valued and reported separately, coverage units need to be determined gross rather than net.
6.19. When does the coverage period start and end?

Appendix A defines coverage period as “the period during which the entity provides coverage for insured events. This period includes the coverage that relates to all premiums within the boundary of the insurance contract”.

Coverage would normally be the effective date of the insurance contract. In some circumstances, coverage may:

- start later, e.g., for travel insurance coverage may only start from the date of travel; or
- appear to start earlier, e.g., a reinsurance treaty may provide cover on claims notified basis (e.g., for emergence of claims not yet reported to the cedant but arising prior to the start date). However, in this case, coverage of notified claims only starts from the start date of the reinsurance contract, and would only start earlier than the start date of the treaty if the treaty also specifically covers claims notified prior to its start.

Normally coverage will cease at the end date specified in the contract, or contract boundary if earlier, or in many cases upon a valid claim arising before the end date. Depending on the nature of the contract, any claims arising from events occurring after that time may not give rise to a valid claim under the contract. Note that notification or settlement of the claim may occur after the end date and the claim amount payable ultimately may continue to develop after the end of the coverage period. However, these are part of the incurred claim liability and do not represent the provision of further coverage.

In other cases, e.g., stop loss reinsurance, while a sequence of independent events might trigger the incurrence of a claim, such events of themselves are not part of the coverage, it is the occurrence of underlying claims for amount that in total trigger a stop loss claim. Here coverage is for claim payments arising in excess of the stop loss attachment point and again coverage starts from the point at which a valid claim could be made under the contract and not the underlying individual events.

Further, subsequent events may change the amount of the claim ultimately payable but they represent development of the claim amount and not the provision of further cover, e.g., an accident may cause a disability which gives rise to the payment of an annuity for the remaining life of the person disabled. In this case, the cover is for the occurrence of an event which causes such disablement.

6.20. Can the coverage units include discounting?

Yes, coverage units can include the impact of time value of money.

IFRS 17 is silent on whether time value of money needs to be allowed for in determining the release pattern for the CSM and paragraph BC282 makes it clear that this has been deliberately left to the discretion of the reporting entity.
An example of discounting and not discounting coverage units is provided in IFRS 17 Illustrative Example 2, IE17(e).

**Subsequent Measurement: Contracts with Direct Participating Features**

6.21. How does subsequent measurement of the CSM differ for insurance contracts with direct participating features?

For insurance contracts with direct participating features, the entity substantially provides insurance and investment related services and is compensated for the services by a fee that is determined with reference to the underlying items. The CSM is subsequently measured similarly as for contracts without direct participating features (see question 6.5) except in relation to:

1. the entity’s share of the change in the fair value of the underlying items (see question 6.22);
2. the interest rate accreted to the CSM (see questions 6.23 – 6.24); and
3. any financial risk mitigation using derivatives (see question 6.25).

The amounts that adjust the CSM do not need to be identified separately. For example, entities need not identify the adjustments to the CSM for changes in the entity’s share of the change in the fair value of underlying items separately from those related to changes to the fulfilment cash flows related to future services. A combined amount can be identified for some or all of them (paragraph 45).

Please also see the answer to 8.12.

6.22. How do changes in the fair value of underlying items impact the CSM?

Changes related to the entity’s share of the fair value of the underlying items – i.e., the variable fee – relate to future service and adjust the CSM except to the extent that:

- the entity meets the conditions for the financial risk mitigation option and chooses to adopt it;
- the entity’s share of a decrease in the fair value of the underlying items exceeds the carrying amount of the CSM, giving rise to a loss; or
- the entity’s share of an increase in the fair value of the underlying items reverses losses previously recognised.
6.23. Is the CSM adjusted for changes in the effect of time value of money and financial risks not arising from the underlying items?

Changes in fulfilment cash flows arising from time value of money and financial risks are regarded as part of the variable fee and recognised in the CSM unless the changes exceed the CSM or the risk mitigation option is taken (refer paragraph B115).

6.24. Which discount rates should be used to calculate the CSM?

No explicit interest is accreted on the CSM since it is re-measured when it is adjusted for changes in financial risks.

6.25. What is required to use and the implications of using the financial risk mitigation option?

Paragraph B115 provides an option for an entity to reduce an accounting mismatch between the measurement of derivatives to mitigate financial risk and the insurance liability. Derivatives are generally measured under IFRS 9 at fair value through profit or loss. For direct participation contracts, changes in the carrying amount of the fulfilment cash flows related to financial risks adjust the CSM instead of being recognised immediately in profit or loss, regardless of whether they relate to the entity’s share of the underlying items.

An entity can choose to apply the option of not adjusting the CSM for some changes in the fair value of underlying items (paragraph 45(b)(i)) or the fulfilment cash flows relating to future service (paragraph 45(c)(i)) if it uses derivatives to mitigate the financial risk arising from the insurance contracts and paragraph B115 applies.

For without direct participation contracts, such an accounting mismatch does not arise as changes in the carrying amount of the fulfilment cash flows related to financial risks do not adjust the CSM.

Onerous Contracts

6.26. What is an onerous group of contracts and how are they treated in profit or loss?

A group of contracts is considered onerous if the CSM would otherwise be negative, i.e., there are future losses expected on the contract after including allowance for the risk adjustment for non-financial risk. This can occur at outset or occur on subsequent measurement if the following amounts exceed the CSM:

(a) unfavourable changes in the fulfilment cash flows allocated to the group arising from changes in estimates of future cash flows relating to future service; and

(b) for a group of insurance contracts with direct participation features, the entity’s share of a decrease in the fair value of the underlying items.

The amount by which the contract is onerous is recognised immediately as a loss when it is known that it is loss making (paragraph 48).
6.27. When are onerous contracts recognised?

A group of onerous contracts needs to be recognised when the group is identified as being onerous, even if this is before coverage has commenced or the first premium is due (paragraph 25).

6.28. What is a loss component?

The loss component represents the amount of losses arising from onerous contracts which are available for reversal. They are excluded from the determination of insurance revenue (paragraph 49), i.e., they are not reflected directly in the financial statements.

6.29. How is the loss component tracked over time?

The loss component is tracked and adjusted over time for further losses and loss reversals by:

allocating any changes in the fulfilment cash flows due to changes in estimates of future cash flows relating to future service, which if:

i) unfavourable increase the loss component and give rise to a further loss; or

ii) favourable reduce the loss component, give rise to loss reversal and re-establishment of CSM once loss component is extinguished.

allocating the remaining change in the fulfilment cash flow of the group on a systematic basis between the loss component and the balance of the liability for remaining coverage (paragraphs 50(a) and 51). Changes to fulfilment cash flows to be allocated (per paragraph 51) are:

i) 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;

ii) changes in the risk adjustment for non-financial risk recognised in the profit or loss because of release from risk; and

iii) insurance finance income or expenses.

The systematic basis used needs to ensure the loss component is extinguished by the end of the coverage period of the group (paragraph 52). This can be done for example by using:

- the same release method that would have been applied to the group if there had been CSM (e.g., coverage); or

- the opening balance of the loss component as a percentage of the future cash flows and risk adjustment relating to future service (see Illustrative Example 8).
Note that while the loss component is not specifically recognised on the financial statements a reconciliation of opening to closing balance of the loss component needs to be disclosed (see paragraph 100(b)).

6.30. How are onerous contracts dealt with if they are acquired through a transfer of business?

Paragraph B95 outlines that the amount identified as being onerous can be classified as either goodwill or as a loss on contracts acquired in a transfer. (See question 6.37 for more detail.)

Reinsurance Contracts Held

6.31. How is the CSM determined at initial recognition for reinsurance held?

A CSM is determined for a reinsurance held contract at initial recognition using the same approach as for the underlying insurance contract except the concept of an ‘onerous’ reinsurance held contract does not exist (paragraph 68). This difference means the CSM can both:

reduce the reinsurance held asset (i.e., present value of reimbursements from the reinsurance contract exceed the present value of reinsurance premiums) and therefore defer recognition of profit from the reinsurance contract; or

increase the reinsurance held asset (i.e., present value of reinsurance premiums exceeds the present value of reimbursements from the reinsurance contract) and therefore defer recognition of losses from the reinsurance contract (see paragraph 65(a)).

The following table shows the measurement of a reinsurance contract where the CSM is negative (i.e., a net cost of purchasing reinsurance - scenario 1) versus when the CSM is positive (i.e., a net gain of purchasing reinsurance - scenario 2). This assumes the risk of non-performance of reinsurer to be negligible.

Table 6.2: Illustrative example of CSM for a Reinsurance Contract

<table>
<thead>
<tr>
<th></th>
<th>Scenario 1</th>
<th>Scenario 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Present value of cash inflows (recoveries)</td>
<td>• (500)</td>
<td>• (500)</td>
</tr>
<tr>
<td>Present value of cash outflows (premiums paid)</td>
<td>• 750</td>
<td>• 450</td>
</tr>
<tr>
<td>Risk adjustment for non-financial risk</td>
<td>• (50)</td>
<td>• (50)</td>
</tr>
<tr>
<td>Fulfilment cash flows</td>
<td>• 200</td>
<td>• (100)</td>
</tr>
<tr>
<td>CSM</td>
<td>• (200)</td>
<td>• 100</td>
</tr>
</tbody>
</table>
6.32. At initial recognition, does the existence of reinsurance held impact the determination of the CSM and onerous contract testing of the gross policy liabilities?

No, because the principle of IFRS 17 (paragraph B66(b)) is to separately recognise the underlying gross liabilities from any associated reinsurance held, the determination of CSM, as well as onerous contract testing of the gross policy liabilities.

As an example, a contract which is onerous at inception on a gross basis would still be considered onerous and accounted for as such even where 100% of this risk is ceded to another party on an original terms coinsurance basis. In this example, the reinsurance held asset would not offset the impairment on the gross liability (i.e., asymmetric accounting, with the practical consequence of a day one loss from the gross liability impairment offset by income from the reinsurance ceded asset over the lifetime of the reinsurance contract).

6.33. How is the CSM on reinsurance held determined at subsequent measurement?

The subsequent measurement of the CSM for reinsurance held is performed using the same approach as for the underlying insurance contract, albeit on the general measurement approach, except when the underlying gross contract(s) becomes onerous (or is already onerous and becomes more or less so) due to changes in fulfilment cash flows relating to future service. In such circumstances, the change in fulfilment cash flows for the reinsurance held also does not adjust the CSM of the reinsurance held under paragraph 66(c) ii.

Note: the criterion for not adjusting the CSM of reinsurance held does not require underlying contracts to be or have become onerous. The only requirement under paragraph 66(c) is that changes in reinsurance fulfilment cash flows results from a change in fulfilment cash flows allocated to a group of underlying insurance contracts that does not adjust the CSM for the group of underlying insurance contracts.

In these circumstances it is possible that the offsetting impact on the reinsurance held may exceed that on the underlying contracts due to accounting mis-matches that could arise between the reinsurance and the underlying contracts (e.g., due to different contract boundaries or measurement approaches).

6.34. How is the reinsurance CSM adjusted when the change in reinsurance fulfilment cash flows relates to an underlying portfolio using PAA?

When the gross liability is determined using the PAA, there are different views as to how paragraph 66(c) applies. Two of these are outlined below.

View (A): Only when the underlying portfolio is onerous is the reinsurance CSM not adjusted. The argument for this is as follows:
(i) This is consistent with the rationale given by IASB that where an underlying group becomes onerous due to changes in estimates for future service then the reinsurance CSM should not be adjusted, creating an offset (BC315);

(ii) Estimates for future service only occur under PAA when the portfolio is onerous (see paragraphs 57-58);

(iii) Criteria for not adjusting reinsurance CSM under paragraph 66(c) are that there is a change in underlying fulfilment cash flows for future service which does not adjust the CSM of the underlying group. Such change only occurs under PAA when contracts are onerous, as otherwise underlying fulfilment cash flows are not measured under PAA;

View (B): The reinsurance CSM is never adjusted when the change in reinsurance fulfilment cash flows relates to an underlying portfolio using PAA even when the underlying cash flows are not onerous as:

(i) there is no CSM under PAA, any change to reinsurance cash flows relating to underlying portfolio does not adjust the CSM of the underlying; and

(ii) the criteria in paragraph 66(c) do not require an actual change in fulfilment cash flows for the underlying, just that the change in fulfilment cash flows of the reinsurance contract that relate to the underlying and do not change the CSM of the underlying group.

6.35. How is the grouping of contracts for CSM impacted by the fact that reinsurance contracts may cover multiple years of underlying policies?

IFRS 17 prohibits grouping contracts issued more than one year apart. Reinsurance contracts held are aggregated differently to the underlying contracts (paragraph 61), in particular they are treated as a separate portfolio from the underlying and are grouped based on the characteristics and inception dates of the reinsurance contract, not the underlying.

This will require careful consideration when matching up which adjustments to the CSM are restricted (as per question 6.33) as there may be multiple underlying groups and no one to one correspondence between contracts or benefits reinsured.

Other Issues

6.36. How is the CSM calculated for business combinations and transfers of insurance contracts at initial recognition?

Unless the PAA for the liability for remaining coverage applies, on initial recognition the CSM is calculated applying paragraph 38 for acquired insurance contracts issued and paragraph 65 for acquired reinsurance contracts held using the consideration received or
paid for the contracts as a proxy for the premiums received or paid at the date of initial recognition.

If acquired insurance contracts issued are onerous, applying paragraph 47, the entity shall recognise the excess of the fulfilment cash flows over the consideration paid or received as part of goodwill or gain on a bargain purchase for contracts acquired in a business combination or as a loss in profit or loss for contracts acquired in a transfer. The entity shall establish a loss component of the liability for remaining coverage for that excess, and apply paragraphs 49–52 to allocate subsequent changes in fulfilment cash flows to that loss component.

See Chapter 11 for a further discussion of on business combinations and portfolio transfers.

6.37. How is the CSM calculated at transition?

The measurement of the CSM or loss component under the full retrospective, modified retrospective and fair value approaches at transition is discussed in Chapter 12 on Transition.

6.38. What needs to be presented?

If an entity chooses to adopt the financial risk mitigation option (see question 6.25), then it discloses the effect of that choice on the adjustment to the CSM that would otherwise have been made in the current period (paragraph 112).

See Chapter 15 for a discussion on what to present relating to the CSM.
Section B – Variations to the General Measurement Approach

This section includes three chapters that cover the variations to the GMA. These are:

- The Premium Allocation Approach – Chapter 7
- Contracts with Participation Features and Other Variable Cash Flows - Chapter 8
- Reinsurance Contracts held – Chapter 9

As discussed in Chapter 7 the PAA may be used whenever it provides a good approximation to the GMA liability for remaining coverage. It may also be used for groups of contracts with a coverage period of one year or less, regardless of whether it provides a good approximation. Many non-life insurance contracts satisfy this criterion. However, longer-term annual renewable contracts may also satisfy this criterion, if the contract boundary lies at the next renewal date.

As discussed in Chapter 8, the circumstances as to when the VFA may be used are not always straightforward especially for contracts with direct participation features which may well vary by jurisdictions. Although not insurance contracts, Investment Contracts with Discretionary Participation Features are in scope of IFRS 17 “provided they are issued by an entity that also issues insurance contracts”. If so these contracts are measured in the same was as Contracts with Direct Participation Features.

Whilst reinsurance contracts issued by an Insurer / Reinsurer are accounted for using the GMA, there are variations as to how an entity accounts for reinsurance held. This is discussed in Chapter 9.
Chapter 7 – Premium Allocation Approach

Before consulting this chapter, be sure to read the Introduction to this IAN, particularly the sections on References to IFRS 17, Materiality and Proportionality.

7.A. What does this chapter address?

This Chapter considers the use of the Premium Allocation Approach (“PAA”) under IFRS17 including the criteria applying to an insurance contract which must be met for an entity to choose this method, the measurement approach and the differences between this approach and the General Measurement Approach. The Chapter focuses on the “liability for remaining coverage” where most of the differences between the PAA and the General Measurement Approach are found, although minor differences for the “liability for incurred claims” are noted. Presentation and Disclosure for PAA is discussed in Chapter 15.

7.B. Which sections of IFRS 17 address this topic?

Paragraphs 18, 53-59, 69-70, 72(c), B72(d),(e)(iii), B126-B127, B133 provide guidance.

BC288–BC295 provide background on this topic.

7.C. What other IAA documents are relevant to this topic?

None
7.1. What is the Premium Allocation Approach?

The Premium Allocation Approach (PAA), which is set out in paragraphs 53-59, is a simplification of the measurement basis in IFRS 17 paragraphs 32–52 (referred to in this IAN as the General Measurement Approach (“GMA”), see the Introduction to Section A of this IAN). Paragraph 53 states that an entity may use the PAA to measure the liability for remaining coverage, if it reasonably expects that the PAA would produce a measurement for a group of contracts that would not differ materially from the one that would be produced applying the GMA, or if the coverage period of each contract in the group is one year or less. The IASB has stated there is only one model, the GMA, for measuring insurance contracts. (See question 7.2 unten).

The PAA primarily applies to the liability for remaining coverage, the obligation that relates to the unexpired portion of the coverage period. With the exception of a couple of simplifications under the PAA (paragraph 59), the liability for incurred claims is measured under the GMA, which is discussed in chapters 2 through 6.

The remainder of this chapter considers questions relevant to when and how the PAA may be used. In particular, see questions 7.10 and 7.11 for more information on how the subsequent liability for remaining coverage is measured under the PAA.

7.2. When might an entity choose to use the PAA?

Whilst the PAA represents a mathematical simplification of the GMA, when an entity decides to implement the PAA will depend on the circumstances of each entity. For example, an entity may prefer to use the PAA where it can be implemented with fewer practical changes to existing systems and processes than might be required to develop an approach to implement calculating and reporting the CSM under the GMA. However, if not all an entity’s contracts may be eligible for the PAA, then an entity may need to consider whether there are benefits to implementing the PAA for eligible contracts and developing an approach to implementing the GMA for other contracts or whether to implement the GMA for all contracts.

The PAA is similar to the unearned premium approach used by many entities for reporting unexpired coverage under IFRS 4, local GAAP and/or regulatory reporting for short duration contracts. However, the PAA is not exactly the same as some unearned premium approaches and adjustments may be required. Therefore, entities may need to consider the benefits and disadvantages of implementing the PAA or the GMA for contracts that are eligible to use the PAA.

Considerations for entities in deciding whether to use the PAA might include, for example, the extent to which existing and potential future contracts are or are not eligible for the PAA; the extent to which existing systems and processes may or may not support reporting the PAA for eligible contracts; and the additional resource and cost that may or may not be required to implement the GMA compared with PAA.
7.3. What are portfolios and groups of contracts?

An important concept to understand when reading this chapter is the level of aggregation under IFRS 17. Refer to chapters 1 Classification of Contracts and 5 Unit of Account.

7.4. When can the PAA be applied?

The PAA can be applied if the conditions in paragraph 53 are met. Paragraph 53 states:

An entity may simplify the measurement of a group of insurance contracts using the premium allocation approach set out in paragraphs 55–59 if, and only if, at the 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 requirements in paragraphs 32–52; or

b) the coverage period of each contract in the group (including coverage arising from all premiums within the contract boundary determined at that date applying paragraph 34) is one year or less.

While the PAA is primarily for groups of short-duration contracts, it is allowed whenever it provides a materially equivalent measure (in this chapter referred to as good approximation) to the GMA liability for remaining coverage (paragraph 53(a)), thus it is not able to differ materially. It is, however, qualified by paragraph 54 (see question 7.5).

Paragraph 53(b) allows the PAA to be used for groups of contracts with a coverage period of one year or less, regardless of whether it provides a good approximation. The length of the coverage period depends on the contract boundary (see question 7.8). Many non-life insurance contracts satisfy this criterion. However, longer-term annual renewable contracts may also satisfy this criterion, if the contract boundary lies at the next renewal date.

Use of the PAA is optional. The GMA can always be used, even where the PAA is allowed. The PAA was introduced mainly to provide a simplified approach for general insurance contracts and short-duration risk insurance more generally. It might be suitable for many single-premium contracts. It may also be suitable for regular-premium contracts, where each premium is commensurate with the risk for the corresponding period of coverage. For more complex contracts, it may not prove simpler in application than the GMA, particularly if the time value of money must be allowed for.

Another consideration is consistency. An entity writing general insurance contracts may prefer to go to some extra effort in testing if the PAA can approximate the GMA in order to use the PAA for as many contracts as possible. This might allow such an entity to use consistent reporting of the whole business and remove the additional burdens of measurement under the GMA in the pre-claims period, such as the more detailed disclosure requirements of the GMA. Conversely, an entity writing life insurance contracts may prefer...
to use the GMA, rather than the PAA, even for simpler contracts, for consistency with how most of its contracts will be measured and presented.

7.5. When is the PAA not allowed?

The PAA cannot be applied in circumstances outlined in paragraph 54 which states:
The criterion in paragraph 53(a) is not met if at the inception of the group an entity expects significant variability in the fulfilment cash flows that would affect the measurement of the liability for remaining coverage during the period before a claim is incurred. Variability in the fulfilment cash flows increases with, for example:

(a) the extent of future cash flows relating to any derivatives embedded in the contracts; and

(b) the length of the coverage period of the group of contracts.

The PAA may have a greater risk of not producing a reasonable approximation to the GMA in the following example scenarios, noting this is not intended to be an exhaustive list:

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Reasoning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patterns of the expected incurred claim costs and the release of the risk adjustment are significantly different from each other, during the coverage period.</td>
<td>The PAA approach reduces the liability for remaining coverage in line with the pattern of incurred claim costs while the GMA would consider the impact of both in the relevant building blocks potentially leading to significant differences in the value of the liability for remaining coverage under the PAA versus the GMA over the coverage period.</td>
</tr>
<tr>
<td>The pattern of expected incurred claim costs is highly uneven and the CSM is significant under the GMA.</td>
<td>The CSM is released in accordance to the insurance service provided which is based on coverage units for the duration of coverage. If the coverage provided by a contract is the same over the coverage period, then the CSM would be expected to be amortized evenly for each coverage period. For the PAA, an uneven pattern of expected incurred claims would result in an uneven pattern of premium allocated to each period. The size of the CSM would then determine the significance of this difference.</td>
</tr>
</tbody>
</table>
The longer the expected payout pattern is for the coverage and / or the higher the interest rate environment.

Significant variability in the cash flows may occur during the coverage period if the time value of money is a major component of the underlying building blocks of the GMA. For very long payout patterns, such as excess workers’ compensation coverage, even a small change in a low interest rate environment could significantly change the value of the liability for remaining coverage. In a high interest rate environment, interest rates tend to be more volatile, and discount can make up a significant portion of the liability for remaining coverage even for shorter tailed non-life business.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Implication</th>
</tr>
</thead>
<tbody>
<tr>
<td>In a high interest rate environment where there is no significant financing component and the premium is due within a year of providing the relevant coverage.</td>
<td>In this situation an entity is not required under the PAA to reflect the time value of money in the liability for remaining coverage but would be required to do so under the GMA.</td>
</tr>
<tr>
<td>In a high interest rate environment where there is significant financing component.</td>
<td>In this situation an entity is required under the PAA to reflect the time value of money in the liability for remaining coverage using a discount rate locked in at initial recognition. A high interest environment tends to be volatile and an entity that used the GMA without a locked in discount rate may produce a significantly different answer for the liability for remaining coverage than the PAA.</td>
</tr>
<tr>
<td>There is a significant investment, service or other non-insurance component to the contract, or there is a significant profit sharing component.</td>
<td>These are complications which the PAA was not designed to handle and where it might not approximate the GMA.</td>
</tr>
<tr>
<td>The cost of any embedded options or derivatives is significant</td>
<td>Paragraph 54 (a) of the standard tells us that increasing amounts of embedded derivatives is an example of where variability in the fulfilment cash flows could be significant.</td>
</tr>
<tr>
<td>Coverage is deferred</td>
<td>While the PAA might require the liability for remaining coverage to accrete interest, the</td>
</tr>
</tbody>
</table>
longer the deferral period the greater the mismatch is likely to occur between the underlying building blocks of the GMA and the PAA’s liability for remaining coverage. The GMA will continue to update expectations of future cash flows while the PAA will only adjust for changes in the timing for incurred claims in the coverage period per paragraph B127.

### Longer duration contracts generally

For many reasons already highlighted, the longer the contract the greater the variability can be in the projected fulfilment cash flows under the GMA.

### Situations where there can be significant changes in the initial “written” premium which could include:

- Cancellation of policies within the coverage period
- Lapses through non-payment of future premiums, when premium has not been paid upfront
- Contractual premium audits during the coverage period
- Reinstatement provisions that could result in additional future premium

Under the PAA, premium is allocated based on the passage of time or incurred claims if the expected pattern of release from risk is significantly different from the passage of time. It does not explicitly reflect cancellations or return of premium, nor future premium from reinstatements or other sources on an expected value basis. Paragraph B126 requires an entity to recognise revenue under the PAA by allocating “expected” premium receipts to each coverage period. No clarity is given on the measurement basis for “expected” premium receipts.

The GMA, on the other hand, reflects premium cash flows on an expected value basis, and changes in them during the coverage period for the liability for remaining coverage as expectations change.

### Contracts with level expected incurred claims and non-level indirect expenses

The PAA would allocate the premium evenly over the contract period while the GMA would recognise the non-level nature of the indirect expenses in the fulfilment cash flows.

7.6. For contracts whose coverage period is greater than 12 months in length, is it necessary to test whether the PAA is an approximation of the GMA?

The standard does not explicitly require a test to demonstrate that the PAA is an approximation of the GMA. However, relevant stakeholders, such as an entity’s auditors,
might expect the entity to justify its use for groups of contracts which contain contracts with more than 12 months coverage. The justification required depends on the circumstances, although paragraph 54 suggests that the criterion is evaluated only at inception looking at the measurement of the “liability for remaining coverage during the period before a claim is incurred”.

For single premium contracts that run for only a few months more than a year, it may be sufficient to demonstrate that there is no obvious reason why the PAA would not be a good approximation to the GMA over the coverage period.

In some simple circumstances, it may be possible to demonstrate mathematical equivalence between the PAA and the GMA. This may be the case, for example, for single premium contracts, if the expected incurred cost is level over the coverage period, the risk adjustment is a flat percentage of the future cash flows and the PAA reflects the time value of money.

For a longer term group of single premium contracts, it may be desirable to perform a few sample calculations on both bases, in order to confirm that they produce similar results for the liability for remaining coverage.

Where there are future premiums, or any other features that create a greater risk of not producing a reasonable approximation to the GMA (see question 7.5 above), it may be desirable to undertake more exhaustive testing. If this is unduly laborious, it may be an indication that the PAA is not appropriate for use.

If limited testing does not clearly indicate that the PAA is a good approximation, and PAA presentation is strongly preferred for such reasons as consistency with the rest of an entity's business, it may be necessary to undertake parallel calculations to confirm a reasonable approximation.

At adoption of IFRS 17 there may be more emphasis on testing approaches until familiarity amongst practitioners allows qualitative reasoning as a justification in certain cases.

7.7. When is a group of contracts recognised?

The recognition criteria for groups under the PAA are the same as for the GMA. Under paragraph 25 a group is recognised at the “earliest of the following:

a. the beginning of the coverage period of the group of contracts;

b. the date on which the first payment from a policyholder in the group becomes due; and

c. for a group of onerous contracts, when the group becomes onerous.”
The first criterion is consistent with how entities in some jurisdictions that write short duration contracts recognised contracts under local GAAPs and IFRS 4 prior to the effective date of IFRS 17. The second criterion would be triggered if any premium deposit, instalment or the full amount is due prior to the start of the coverage period.

7.8. What is the contract boundary?

The contract boundary is defined by paragraph 34, and discussed in Chapter 1 of this IAN.

The significance of the contract boundary in the context of the PAA lies in whether the contract has a coverage period of one year or less and is therefore automatically eligible for the PAA. For many general insurance contracts, neither insurer nor insured is obliged to renew, so the contract boundary is clear.

The situation is rather less clear for compulsory insurances, where the right of the insurer to set a premium that fully reflects the risk is compromised in certain jurisdictions.

In cases of doubt, the actuary may seek guidance from the entity’s technical accounting group to reach a consensus on the issue.

7.9. What is the initial measurement approach to the liability for remaining coverage?

The initial measurement under the PAA is set out in paragraph 55(a).

on initial recognition, the carrying amount of the liability is:

i.  the premiums, if any, received at initial recognition;

ii. minus any insurance acquisition cash flows at that date, unless the entity chooses to recognise the payments as an expense applying paragraph 59(a);

and

iii. plus or minus any amount arising from the derecognition at that date of the asset or liability recognised for insurance acquisition cash flows applying paragraph 27.

Under paragraph 59(a), if the coverage period is 12 months or less for each contract in the group at initial recognition the entity “may choose to recognise any insurance acquisition cash flows as expenses when it incurs those costs.” This may cause a material difference between the PAA and the GMA for the liability for remaining coverage which is why it is only permitted when the coverage period is less than 12 months for each contract in the group and the safe harbour election of the PAA can be made.

Onerous contract liabilities are discussed below (see question 7.14).

For general insurance business, on a single premium basis with the initial recognition when the premium is due, if the option in paragraph 59(a) is not taken, the overall effect is that of an unearned net premium. Instead of an initial unearned premium (UEP) equal to the written
premum, less an initial deferred acquisition cost equal to the deferrable acquisition costs (DAC), the initial UEP is effectively net of acquisition costs and there is no DAC asset.

While initially thought of as a UEP model, the PAA’s initial measurement criteria will not provide users of the financial statements with as much information as an unearned premium model grossed up for acquisition expenses and any premium owed. The PAA, through approximating the GMA of netting cash inflows and outflows, will not include the future inforce exposure by the amount of premium owed.

If the 59(a) option is taken, the initial UEP is equal to the premium received, but with no DAC. The effect of this is that the net liability is greater than under previous approaches by the amount of DAC that is not recognised.

This measurement approach does not capture any expectation of policy cancellations. If significant, policy cancellations on premiums paid could result in overstating the liability, or for contracts with a coverage period of greater than 12 months the use of the PAA may not be appropriate per the requirements of paragraph 54 of IFRS 17, which require that there not be an expectation of significant variability in the fulfilment cashflows that would affect the measurement of the liability for remaining coverage.

7.10. What is the subsequent measurement approach to the liability for remaining coverage?

The subsequent measurement under the PAA is also set out in paragraph 55(b) which states

at the end of each subsequent reporting period, the carrying amount of the liability is the carrying amount at the start of the reporting period:

(i) plus the premiums received in the period;
(ii) minus insurance acquisition cash flows; unless the entity chooses to recognise the payments as an expense applying paragraph 59(a);
(iii) plus any amounts relating to the amortisation of insurance acquisition cash flows recognised as an expense in the reporting period; unless the entity chooses to recognise insurance acquisition cash flows as an expense applying paragraph 59(a);
(iv) plus any adjustment to a financing component, applying paragraph 56;
(v) minus the amount recognised as insurance revenue for coverage provided in that period (see paragraph B126); and
(vi) minus any investment component paid or transferred to the liability for incurred claims.

As set out in B126, insurance contract revenue is recognised in each accounting period;

a) on the basis of the passage of time; but
b) 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.
Onerous contract liabilities and the circumstances under which the adjustment for the time value of money is required are discussed below (see questions 7.14 and 7.15). In practice, it is possible to turn this procedure around. In the absence of onerous contract liabilities, the PAA liability is the (present) value of future revenue (less future premiums). For single premium contracts where future revenue is pro-rata (see question 7.12 below) and discounting can be ignored, it may be easier to think in terms of UEP and calculate premium revenue as UEP at the start of the period, plus premiums received, minus UEP at the end of the period, similar to previous accounting practice.

7.11. What acquisition expenses should be used in the initial measurement?

Insurance acquisition cash flows is a term defined in Appendix A of IFRS 17 and is used in Paragraph 59(a). Their amount is an accounting determination but might include commissions, underwriting costs and contract setup expenses. For each group, all of these expenses must be directly attributable to the portfolio of insurance contracts to which the group belongs. For more details see chapter 4 on Estimates of Future Cash Flows.

7.12. How is revenue recognised for subsequent measurement periods?

Revenue recognition under the PAA is specified in paragraph B126.

…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, applying paragraph 56) allocated to the period. The entity shall allocate the expected premium receipts to each period of coverage:

a. on the basis of the passage of time; but

b. 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.

In practice, unless there are particular reasons to expect an uneven pattern, a good starting point might be an a priori pro rata assumption, modified to the extent demanded by credible experience. There is an inherent tension between using the largest possible portfolio to maximise credibility and smaller sub-portfolios to detect intra-portfolio variations. The best balance is a matter of judgement.

There is also the question of what does “differs significantly from the passage of time” mean? This is not defined by the standard although the term “significant” is often used in accounting frameworks to relate that something has more than a remote likelihood of causing a misstatement. This appears to be a lower threshold than something that is material, an item in accounting that would have an impact on the reader of the financial statement. Some may consider this a matter of accounting, rather than actuarial judgement, where the actuarial role is to provide the analysis on which that judgement can be based.

For example, the storm damage component of the premium for a home-owners policy in Queensland, Australia, where cyclone season typically falls between November and April, would differ significantly from the passage of time. But other perils insured under the policy
may have no such pattern, or even offsetting patterns. Other types of policies may have more subtle seasonal effects that would, due to the large number of policies sold, have a significant impact on revenue. For example, auto policies in the northern states of the US incur 72-74% of incurred losses over the first 9 months of a calendar year with the remaining 26-28% being incurred over the last quarter with the inclement winter months. This difference is subtle in terms of ultimate loss but might have a significant impact on the revenue recognition and bottom line profit of the company if the premium was recognised in line with the expected timing of incurred claims.

7.13. How should the liability for incurred claims be measured for contracts valued using the PAA?

The PAA is primarily a simplification of the measurement approach for the liability for remaining coverage under the GMA. However, there are a couple of minor simplifications that are permitted when measuring the claim liabilities, or the liability for incurred claims, if the contracts are initially measured under the PAA.

For contracts measured under the PAA, the liability for incurred claims is measured using the GMA with one potential modification; 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, as per Paragraph 59 (b).

The GMA allows for an entity to elect to lock-in interest rates for purposes of recognising finance income or expenses over the life of a contract, with changes in market rates going through Other Comprehensive Income (OCI). Based on paragraphs B133 and B72 (e) (iii), an entity that has used the PAA for measuring the liability for remaining coverage and wishes to lock-in discount rates shall do so based on the incurred date of the claim liabilities, and not the initial contract recognition date as per the GMA. For practical purposes of implementation, one way to do this is to lock-in a discount rate for each group of contracts based on the average accident date of a period (quarterly or annual). This could be justified if the average claim size is assumed to be uniformly distributed over the period.

7.14. When and how should an onerous contract liability be recognised?

Onerous contracts, in the context of the PAA, are the subject of paragraphs 18 and 57.

18 For contracts issued to which an entity applies the premium allocation approach (see paragraphs 53-59), the entity shall assume no contracts in the portfolio are onerous at initial recognition, unless facts and circumstances indicate otherwise. An entity shall 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.

57 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:

(a) the carrying amount of the liability for remaining coverage determined applying paragraph 55; and

(b) the fulfilment cash flows that relate to remaining coverage of the group, applying paragraphs 33–37 and B36–B92. However, if, in applying
paragraph 59(b), the entity does not adjust the liability for incurred claims for the time value of money and the effect of financial risk, it shall not include in the fulfilment cash flows any such adjustment.

Note that, in the first instance, this test is applied to a group of contracts within a portfolio. Unless there are facts, or other circumstances, supporting the belief that the group of contracts is onerous, it is not necessary to look further at inception whether there is a group of onerous contracts. The latter half of paragraph 18 would indicate that the entity would still need to consider at inception whether to categorise the contracts in the portfolio as belonging to a group that has no significant possibility of becoming onerous in subsequent periods or not, as described in paragraphs 16 (b) and (c), based on the likelihood of the facts and circumstances changing during the coverage period.

Contracts may be onerous at issue or may become onerous later during the coverage period. The wording “facts or other circumstances” in this paragraph implies that an explicit test is not required. An explicit test is only needed when there is reason to believe that the portfolio containing the contracts may be onerous. This is clearly a matter of judgement. Possible indicators that may inform the decision to conduct testing include:

a. a group of contracts in the portfolio that are known to be onerous at initial recognition;
b. past losses in the portfolio;
c. aggressive underwriting or pricing;
d. unfavourable experience trends; and
e. unfavourable external conditions.

Groups of onerous contracts might also be identified by parallel GMA and PAA calculations. The excess of the GMA over the PAA liability for remaining coverage is recognised as a loss in P&L and increases the liability for remaining coverage. The GMA liability is discussed in chapters 2 to 6, but may be modified in accordance with paragraph 57(b) to exclude discounting, if the corresponding liability for incurred claims is (or would be) undiscounted in accordance with paragraph 59(b).

If at any time during the coverage period, facts and circumstances indicate that a group of insurance contracts is onerous, it is necessary to recalculate the difference between the GMA valuation of the liability for remaining coverage and the carrying amount (paragraph 57).

An onerous contract liability cannot arise for incurred claims, since these are not part of the liability for remaining coverage and are already valued at current fulfilment value under the GMA.

Onerous contracts are discussed further in chapter 5 on Unit of Account.

7.15. When is an adjustment made to the liability for remaining coverage for the time value of money required, and how is the adjustment made?

Adjustment for the time value of money is subject to paragraph 56. An adjustment is required where there is a “significant financing component” to contracts in a group. It is optional to adjust the liability for remaining coverage for the time value of money, if the time between providing the relevant portion of insurance coverage and the due date for the corresponding premium is expected to be 12 months or less.
The discount rates to be used are as determined at initial recognition of the contract. Interest rates are discussed further in chapter 3.

7.16. If the entity elects to use OCI for changes in interest rates in subsequent measurement periods for the liability for incurred claims, what is the locked-in discount?

If electing the OCI option to minimise the volatility from changes in interest rates in profit and loss, under the GMA the discount rate is locked-in at the start of the coverage period of the contract. The IASB has allowed for a practical difference with the PAA in paragraph B72 (e) (iii) whereby the discount rate is locked in based on the date incurred losses are recognised. Effectively, for practical purposes, for most portfolios of contracts this would imply the locked-in discount rate would be based on the average accident date of a period (e.g., quarterly or annual).

7.17. How is ceded reinsurance dealt with under the PAA?

Under paragraph 69, the PAA may be used for ceded reinsurance contracts, if they meet the same criteria as for direct insurance contracts. For proportional reinsurance, this may be the case if the direct contract is eligible for the PAA assuming the coverage is on a losses occurring basis, where the reinsurer covers losses that occur for a defined period of time under the contract. This is not necessarily true for proportional reinsurance on a policies or risks attaching basis, where the reinsurer covers losses arising from policies written over a defined period of time. For example, if these reinsurance contracts attach policies over a one-year period and the attaching policies are also written over a one-year period then the reinsurance contracts would have a coverage period of two years and would not be automatically eligible for PAA based on coverage of one year or less.

Conversely, non-proportional reinsurance is typically written on a loss occurring basis and may be eligible for the PAA, even if the underlying direct contracts are not, as long as the coverage period is one year or less. Some non-proportional reinsurance is unlikely to qualify for the PAA. For example, a catastrophe cover for tropical storms and other aggregate covers with a term in excess of one year may not qualify because the pattern of risk is likely to differ significantly from pro-rata over time. See earlier scenarios list in question 7.5.

7.18. How is assumed reinsurance dealt with under the PAA?

Paragraph 3 indicates that the standard applies to “insurance contracts, including reinsurance contracts” an entity issues. IFRS 17 does not explicitly differentiate between the treatment of an issued insurance contract and an issued reinsurance contract. Consequently, the PAA may be used if the reinsurance contract meets the requirements of paragraph 53. It is worth noting again that a risks attaching reinsurance contract, even with a contract length of one year, would not automatically be eligible for the PAA under paragraph 53(b) as the coverage provided would be in excess of one year but it might still be possible to apply PAA.

Under a non-proportional reinsurance treaty, particularly some catastrophe covers, such as those covering tropical storms, and other aggregate covers, the pattern of risk may differ significantly from pro-rata over time and therefore may not qualify for the PAA if the contracts have coverage periods in excess of one year.
7.19. When and how does an entity bifurcate non-insurance features under the PAA?

Non-insurance features are treated in the same way under the GMA and the PAA. Bifurcation is discussed in chapter 2. After bifurcation, the insurance part of the contract is valued in the same way as a stand-alone contract.

7.20. How are results presented under the PAA?

See chapter 15.

7.21. How is transition to the new standard treated if the entity will measure its liabilities using the PAA?

Transition is discussed in chapter 12. The PAA is not explicitly mentioned in IFRS 17 Appendix C, which covers transition.

It will usually be straightforward to apply the PAA retrospectively in accordance with paragraph C4 when the duration of most PAA contracts is one year or less, but the amount of effort may be dependent on internal data capture and systems. Retrospective implementation will require additional effort for contracts with coverage periods longer than one year.

7.22. How are contract modifications handled under the PAA?

Contract modifications are the subject of paragraphs 72 and 73.

Paragraph 72 indicates that when a contract is modified, “an entity shall derecognise the original contract and recognise the modified contract as a new contract”. It further notes that the “exercise of a right included in the terms of a contract is not a modification” but provides an exhaustive list of conditions under which the contract can be derecognized if, and only if, one or more of the conditions is met. These conditions include a modification that would have changed the group to which the contract would have been assigned at inception or a modification that would have changed a contract being accounted for under the PAA to no longer being eligible for that simplification.

Paragraph 73 is written in terms of the GMA, indicating that if none of the conditions are met under paragraph 72 the “entity shall treat changes in cash flows caused by contract modifications as changes in estimates of fulfilment cash flows by applying paragraphs 40-52”. Paragraphs 40-52 detail subsequent measurement under the GMA; therefore, for contracts where the PAA is applied, it would seem appropriate to proceed by applying the guidance for subsequent measurement under the PAA that is in paragraph 55(b).

See also chapter 14 Contract Modifications.
Chapter 8 – Contracts with Participation Features and Other Variable Cash Flows

Before consulting this chapter, be sure to read the Introduction to this IAN, particularly the sections on References to IFRS 17, Materiality and Proportionality

8.A. What does this chapter address?

This Chapter considers the recognition, measurement and presentation of participating features, particularly in the case of contracts with direct participation features, as well as for other cash flows subject to the discretion of the insurer or linked to indices, including the criteria to be met for those classifications. The specific considerations on transition for participating contracts are covered in Chapter 12 – Transition.

8.B Which sections of IFRS 17 address this topic?

Paragraphs 45, 48(b), 71-72, 87, 89 111-113 and B27, B67-B71, B94, B96-B97, B101-B118 provide guidance on this topic.


8.C What other IAA documents are relevant to this topic?

None
General Issues

8.1. What are the types of participating contracts?

IFRS 17 defines different types of participation:

a) An Insurance contract with direct participation features (“Direct Participating Contract” or “DPC”). The contracts are defined in Appendix A and B101 and are measured using a variation of the approach used for insurance contracts without direct participation features.

b) Investment contracts with discretionary participating features. These contracts are defined in Appendix A and are measured under IFRS 17 rather than IFRS 9.

c) In addition, there are many different types of participating contracts in each jurisdiction that do not meet the criteria of a) or b). The actuaries in each jurisdiction will need to examine each type of insurance contract to see if it meets the requirements to be a Direct Participating Contract (DPC) (see 8.3). For example, some contracts may have discretionary payments that depend on the return on assets but do not meet either of the other requirements. Participating contracts that don’t meet all the requirements to be a DPC are measured in the same way as insurance contracts without direct participation features.

In assessing whether a contract is DPC, careful consideration must be made of the impact of guarantees both in terms of guaranteed returns and guaranteed benefit amounts as this will impact whether the requirement of B101(b) and B101(c) are met (B108). This means there may be groups of insurance contracts within the same product which fail to meet the requirements for direct participation, for example, where different levels of guarantees are chosen by different policyholders. It is possible that some contracts within a product could be measured as DPCs while others are measured as insurance contracts without direct participation features.

8.2. How is reinsurance handled for participating contracts?

Reinsurance contracts, issued or held, never meet the requirements to be a DPC and therefore are measured in the same way as insurance contracts without direct participation features (B109 and explained in BC248-BC249). See also Chapter 9 on Reinsurance.

Direct Participating Contracts

8.3. What is the definition of a Direct Participating Contract?

DPC are those contracts which meet the following criteria:

An insurance contract for which, at inception:

(a) the contractual terms specify that the policyholder participates in a share of a clearly identified pool of underlying items.
(b) the entity expects to pay to the *policyholder* an amount equal to a *substantial share* of the fair value returns on the *underlying items*; and

(c) the entity expects 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*.

For a DPC the definition of coverage period includes the period when the contract provides investment services as well as insurance services.

The standard defines “fair value” in several places, such as in the definition noted above. The fair value methodology is consistent with the fair value approach of IFRS 13. For further discussion on the measurement of fair value see the separate chapter – Chapter 10 Fair Value.

8.4. What does a clearly identified pool of underlying items mean?

The requirement is that underlying items are clearly identified by the contract. The definition of underlying items is given in Appendix A and expanded upon in B106:

> 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.

In order to meet the definition, B105 requires that the link to underlying items be “enforceable”. Enforceability (paragraph 2) is a matter of law. This can be contractual (contracts need not be written and can be implied by “an entity’s customary business practices”) and includes those imposed by external parties such as law or regulation. Enforceability cannot be assumed to apply for example across all products written by an entity.

8.5. What types of items can be included in the pool of underlying items?

B106 provides more information about the composition of underlying items. This could be a reference portfolio or the net assets of the entity. It does not need to be a separately defined fund belonging to the policyholder. The assets do not even need to be held by the entity e.g., the underlying items could be a defined external index.

8.6. *Can profits from portfolios of certain insurance contracts owned by a “participating” fund qualify as underlying items?*

This is likely to depend upon the nature of that income and is an issue that needs to be resolved between the reporting entity and its auditor.

8.7. What are some examples of situations that do not meet the requirements to be defined as underlying items?
A couple of examples are set out in B106 as not meeting the requirements to be defined as underlying items:

a) an entity can change the underlying items that determine the amount of the entity's obligation with retrospective effect; or

b) 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 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.

This latter example would exclude many traditional participating contracts from qualifying as DPCs.

8.8. What does a substantial share or substantial portion mean?

IFRS 17 does not specifically define what "substantial" means. In B101(b) the requirement is that the policyholder shares in a “substantial share of the fair value returns on the underlying items” and in B101(c) a “substantial proportion” of the amounts paid to policyholders to vary with the fair value of the underlying items.

This is further clarified in B107. The assessment is not made on a period by period basis but rather over the duration of the group of insurance contracts and

(ii) on a present value probability-weighted average basis, not a best or worst outcome basis.

8.9. What is the conceptual basis for measuring DPCs?

B104 explains that for a DPC, the entity's obligation to the policyholder is the net of:

(a) the obligation to pay the policyholder an amount equal to the fair value of the underlying items; and

(b) a variable fee

Further this variable fee is made up of two components:

(i) the entity's share of the fair value of the underlying items; less

(ii) fulfilment cash flows that do not vary based on the returns on underlying items.

So DPCs create:

an obligation to pay policyholders an amount equal in value to specified underlying items, minus a variable fee for service. That fee is an amount equal to the entity's share of the fair value of the underlying items minus any expected cash flows that do not vary directly with the underlying items.

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The detail of this subsequent measurement is set out in B110 – B114 with further comments in BC238 – BC249.

Unlike insurance contracts without direct participation features, however, “all the adjustments are measured using current discount rates”.

All these different adjustments do not have to be identified separately (B114).

Note that the PAA, as described in Chapter 7, cannot apply when the insurance contracts meet the definition of a DPC.

8.10. How do DPCs work on initial recognition?

On initial recognition the approach for DPCs is identical to the approach used for insurance contracts without direct participation features. Fulfilment cash flows and a CSM are determined in the same manner as set out in paragraphs 32 - 39.

8.11. What discount rate is used for measurement?

The discount rate used for cashflows that vary based on the returns on underlying items are discussed in B74 – B77.

The standard allows for different approaches. The cash flows can either be discounted using rates that “reflect that variability”, or the cashflows themselves can be adjusted for that variability and discounted at a rate that reflects that adjustment. This is the case regardless of whether the entity actually holds the underlying items or not and whether the variation is set out in the contract terms or a matter of discretion.

Similarly, nominal cashflows (including the effect of inflation) are discounted using a discount rate that also includes the effect of inflation; and real cash flows (excluding the effect of inflation) are discounted at rates that exclude the effect of inflation.

Where minimum guarantees exist, the return is not solely dependent on the return on underlying items and the discount rate is adjusted to allow for the impact of the guarantee, even if the guarantee is lower than the expected return on the underlying items.

The standard does not require entities to divide cash flows into those that vary based on the return on underlying items and those that do not. If a split is not carried out, the discount rate reflects the impact on the combined cashflows. The standard cites both stochastic modelling techniques and risk-neutral approaches as appropriate approaches for doing this. (B77).

8.12. How do DPCs work on subsequent measurement?

DPCs are contracts where the entity's obligation to the policyholder is closely related to the underlying items. The entity's obligation to the policyholder is the net of (see paragraph B104):

(a) the obligation to pay the policyholder an amount equal to the fair value of the underlying items; and
(b) a variable fee that the entity will deduct from (a), comprising:
   (i) the entity’s share of the fair value of the underlying items; less
   (ii) fulfilment cash flows that do not vary based on the return on underlying items.

This relationship between the entity’s obligation to the policyholder and the underlying items requires the contractual service margin for DPCs being updated for more changes than for insurance contracts without direct participation features.

a) The CSM is additionally adjusted for the change in the entity's share of the fair value of the underlying items (see paragraphs 45(b) and B112), except to the extent that risk mitigation is applied (see paragraph B115 and question 8.15).

b) There is no explicit accretion of interest on the CSM, as this is implicit in (a).

c) The adjustment for changes in fulfilment cash flows that do not vary based on the returns on underlying items is measured using current discount rates (see paragraph B113(a)).

d) The adjustment for changes in fulfilment cash flows that do not vary based on the returns on underlying items includes the change in the effect of the time value of money and financial risks not arising from the underlying items (see paragraph B113(b)), except to the extent that risk mitigation is applied (see paragraph B115 and question 8.15).

e) Please also note that coverage for investment-related services is included, in addition to coverage for insured events, in the determination of coverage units when releasing the CSM (following the proposed amendments through the [2018] annual improvement cycle).

8.13. What discount rate is used for DPCs on subsequent measurement?

When making adjustments to the CSM for DPCs, all changes are determined using current discount rates. This applies to the entity’s share of the change in the underlying items and also changes in estimates of the fulfilment cash flows (B113). No locked-in interest rate is used.

8.14. What cash flows adjust the CSM in a given period for DPCs?

Changes in the value of the obligation to pay the policyholder an amount equal to the fair value of the underlying items (paragraph B104(a)) do not adjust the contractual service margin as they do not relate to future service (B111).

Changes in the entity’s share (paragraph B104(b)(i)) adjust the CSM as they do relate to future service (B112).

Changes in the fulfilment cash flows that do not vary based on the returns on underlying items (paragraph B104(b)(ii)) consist of two categories (B113). Taking the second first (B113(b)): 
the change in the effect of the time value of money and financial risks not arising from
the underlying items; for example, the effect of financial guarantees. These relate to
future service and, applying paragraph 45(c), adjust the contractual service margin...

In B113(a) all other changes in estimates of the fulfilment cash flows apart from those in
(b) are treated in the same manner as insurance contracts without direct participation
features and hence

an entity shall apply paragraphs B96–B97, consistent with insurance contracts without
direct participation features, to determine to what extent they relate to future service
and, applying paragraph 45(c), adjust the contractual service margin.

8.15. How does risk mitigation such as hedging impact the measurement of DPCs?

If risk mitigation is used then, for DPCs, the entity can choose to put some or all of the
changes in the effect of financial risk in the entity’s share of the underlying items
component of the variable fee (B113(b)) through the CSM. This is to remove accounting
mismatches.

This would for example allow the change in the fair value movement in derivatives which
goes through P&L to be offset by the equivalent fair value movement in liabilities through
P&L, as opposed to the liability impact being spread through the CSM (B115).

There are requirements to do this. These are set out in B116.

“an entity must have a previously documented risk-management objective and strategy for
using derivatives to mitigate financial risk arising from the insurance contracts and, in applying
that objective and strategy:

a) the entity uses a derivative to mitigate the financial risk arising from the insurance
contracts.

b) an economic offset exists between the insurance contracts and the derivative, i.e.,
the values of the insurance contracts and the derivative generally move in
opposite directions because they respond in a similar way to the changes in the
risk being mitigated. An entity shall not consider accounting measurement
differences in assessing the economic offset.

c) credit risk does not dominate the economic offset.”

This means the risk mitigation cashflows used in the fulfilment cashflows may need to be
allocated to each group and applied consistently in each reporting period (B117).

Finally, if the conditions required to use this approach are no longer met then the approach
cannot be used from that date, however previous periods are not adjusted retrospectively
(B118).
8.16. What happens when a DPC is modified?

If the terms of a contract are changed so that the insurance contract no longer meets the requirements for direct participation or vice versa (paragraph 72), the original contract is derecognised and a new contract recognised based on the modified terms. See Chapter 14 “Contract Modifications and Derecognition” for further details on contract modification.

8.17. Are there any special requirements for a DPC on transition?

There are specific requirements for DPC on transition. Some of the requirements differ from insurance contracts without direct participation features. See Chapter 12 – Transition for further details on transition requirements.

Investment Contracts with Discretionary Participating Features

8.18. What is the definition of an investment contract with a discretionary participating feature?

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:

- that are expected to be a significant portion of the total contractual benefits;
- the timing or amount of which are contractually at the discretion of the issuer; and
- 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.

The treatment of these contracts is covered in paragraph 71 and B27(a) confirms that these contracts, although not insurance contracts, are in scope of IFRS 17 “ provided they are issued by an entity that also issues insurance contracts ”.

8.19. What are some examples of investment contracts discretionary cash flows?

One common example would be discretionary interest payments on a savings-type product.

8.20 How are Investment Contracts with DPF measured?

Investment Contracts with DPF are subject to the same measurement considerations as direct participating contracts - refer to questions 8.3 to 8.17.

Other Participating Contracts

8.21. What are some other types of participating contracts?
Traditional participating contracts where dividends (bonuses) are declared annually after completion of the year, not based directly on the return on a specified pool of underlying assets, are the most common type of contract that may fit here. For example, where there is no enforceable sharing mechanism specified for the participating contracts in question, so the dividend (bonus) can be adjusted to support performance on other contracts, or where the dividend (bonus) does not only depend on changes in the underlying items but also is materially based on sharing of expense or mortality profits as well. There are, however, a great variety of such contracts worldwide so each actuary needs to look at the particular contract under consideration to determine whether it meets the requirements to be a Direct Participating Contract.

8.22. How are cash flows on those contracts measured?

Many insurance contracts exist where there is an element of discretion (either in timing or amount) over the amounts paid to policyholders. Many of these will not meet the requirements for direct participation and hence are measured using the general measurement approach.

For these contracts (without direct participation features), expected discretionary payments are cash flows directly related to fulfilment of the contract and included within the contract boundary (B65). Any change in the discretionary element paid to policyholders that relates to future service adjusts the CSM. In order to assess if such a change has arisen an expected basis for these discretionary payments is included in the fulfilment cashflows at inception. The CSM is then adjusted for deviations from these expected cashflows (B98) subject to the following.

- Changes in these payments can arise as a result of changes in financial risk (these do not adjust the CSM) on those payments and “discretionary changes to that commitment” (adjust the CSM) (B99).

- If it is not possible to separate the commitment at inception and the discretionary element then the commitment is defined “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”. (B100, BC237).

For some types of contracts, amounts may have accumulated over many decades in participating funds. The ownership of these funds may not be clear cut between shareholders and policyholders. If difficult judgements with unusual levels of uncertainty are required, this would require suitable disclosure.

When Cash Flows in one group (either Direct Participating or not) are impacted by cash flows in another group

8.23. In what circumstances are cash flows in one group considered to be impacted by cash flows in another group?
IFRS 17 recognises that sharing between groups of policyholders arises and has a section on “Contracts with cash flows that affect or are affected by cash flows to policyholders of other contracts” (B67 – B71).

This is limited to the sharing that arises from policyholders sharing in the returns on underlying items with other policyholders, including guaranteed payments either to that policyholder or the other policyholders. The basis for conclusions explains that this is a subset of the effect referred to as “mutualisation” (BC171) and that IFRS 17 only refers to this specific type of sharing, and other types such as “the effects of specific contractual terms to general risk diversification” are not included in the scope of “sharing.” The sharing will normally go both ways, so if a group of policyholders shares profits with another group but the second group does not share profits in reverse, this is not the mutualisation case being considered.

Payments and sharing of returns between existing groups of policyholders can be to current or future policyholders (B68(a)) recognising the fact that sharing mechanisms smooth payments over time and it is not possible to determine when or to whom payments will be made at any one point in time.

The important point is not to double count any impacts i.e., payments that have been included in the cash flows of one group are not included again in the cash flows of another.

As in other areas, IFRS 17 does not prescribe the approach to allow for the benefit / impact of this sharing. Different practical approaches are allowed. IFRS 17 does recognise that this practical approach may be at a higher level of aggregation than the individual groups of contracts. If this is the case, then a systematic and rational approach is used to allocate the effect of the change in underlying items to individual groups of contracts. Groups of contracts are still subject to the annual grouping requirement, just as contracts with no such sharing mechanism.

These fulfilment cash flows in a group of contracts may include payments expected to be made to current policyholders in other groups or to future policyholders. IFRS 17 does allow an approach where a liability for all such payments to be recognised and measured at an aggregate level with no allocation to specific groups (B71).

8.24 What are examples of situations in which cash flows in one group are impacted by cash flows in another group?

If profit sharing exists between two different groups, B69 explains the treatment. This is a very simple example. The first has a guarantee giving rise to fulfilment cashflows of 100. The second actually supports this guarantee. Without supporting the guarantee its share of the underlying items would be 350. When it provides support to the other group the share falls to 250 (350 – 100). Under IFRS 17 the fulfilment cashflows of the group providing the support reflect the full 350 i.e., including the 100, and the other group, which receives the support, excludes the 100 in relation to the guaranteed amount. This may represent a
Mutual Insurance Companies

8.25. Are there any special rules for mutual insurance companies?

The precise nature of mutuals varies widely. For all mutuals, in some manner policyholders, or subsets of policyholders, will also own the company i.e., “most of the residual interest of the entity is due to a policyholder and not a shareholder” (BC265).

The treatment will depend on the exact facts and circumstances of the mutual in question. Mutual insurers are, however, a specific case of mutualisation. Significant sharing exists between different groups of policyholders. In fact, policyholders, or a subset of policyholders will have rights to some, if not all, of the profits of the company.

This means that some policyholders will have two identities. The first a policyholder of the mutual insurer / entity, the second an owner of the mutual insurance company. These two roles are considered separately (B16).

Mutual insurers and the specific considerations for a mutual insurance company are considered further in the Basis for Conclusions (BC264 – BC269).

As some or all of the policyholders share in the residual interest, this means that residual interest payments to policyholders form part of the fulfilment cash flows regardless of whether those payments are expected to be made to current or future policyholders.

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 (BC265).

This can give rise to accounting mismatches between the measurement of insurance contracts, measured at current value using fair value information, and the measurement of other net assets, not required to be measured at fair value, of the mutual insurance company. The other assets may be required to be measured on a basis giving rise to a value lower than fair value (BC266).

This means that liabilities on the balance sheet may be higher than recognised assets, even though they are solvent for regulatory purposes and therefore are shown to have no equity rather than negative equity (BC267).
Comparability across the entire insurance industry is important, irrespective of the nature of the insurance entity. To allow for the specific nature of mutual insurers, under IFRS 17 those mutual insurers can distinguish between (BC269):

(a) in the statement of financial position, the liability attributable to policyholders in their capacity as policyholders from the liability attributable to policyholders with the most residual interest in the entity; and

(b) in the statement(s) of financial performance, the 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.

8.26. When are any ownership rights of a policyholder in the mutual insurance company measured?

Ownership rights of a policyholder in a mutual insurance company may or may not be specifically measured depending on the jurisdiction, the type of company and the terms of a contract. The actuary may need to discuss the treatment to be used with his principal and the company’s auditors to agree a treatment for the company.

8.27. Is it possible for a mutual insurance company to have equity?

This is a controversial question. In BC265 it is implied that the IASB believes that normally mutual insurers will have no equity. This statement is not guidance, however, and it leaves open the possibility for exceptions. Discussions in the industry have disagreed that there is no equity on a variety of grounds depending on, among other items, the exact terms of the contract and regulatory requirements to hold capital.

The OCI Option

8.28. What is the OCI option?

Under IFRS 17 the insurance finance income or expenses comprises the change in the carrying amount of the group of insurance contracts arising from (paragraph 87):

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; but

c. excluding any such changes for groups of insurance contracts with direct participation features that would adjust the contractual service margin but do not do so when applying paragraphs 45(b)(ii), 45(b)(iii), 45(c)(ii) or 45(c)(iii). These are included in insurance service expenses.

An entity can make an accounting policy choice between including the full amount of the insurance finance income or expense in P&L or disaggregating this amount between P&L
and other comprehensive income (OCI) using a systematic allocation of the expected total insurance finance income or expenses over the duration of the group of contracts for contracts without direct participation features (paragraph 88).

For DPC the disaggregation is different. The disaggregation eliminates accounting mismatches with income or expenses included in profit or loss on the underlying items held (paragraph 89).

In both cases the balance of the amount included in P&L on disaggregation and the total amount of insurance finance income or expenses in the period is included in OCI (paragraph 90). The accounting policy choice as whether to disaggregate insurance finance income or expenses is made at the portfolio of insurance contracts level and is made in conjunction with an assessment of the treatment of the portfolio of assets (B129).

Changes in assumptions that relate to financial risk are included in insurance finance income or expenses. Inflation can be a financial or non-financial assumption. It depends on the nature of the inflation and how it is used (B128):

a. 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;

b. assumptions about inflation based on an entity's expectation of specific price changes are not assumptions that relate to financial risk.

8.29. How does the OCI option apply to DPCs?

If an entity chooses to disaggregate insurance finance income or expenses for DPCs in the P&L the insurance finance income or expenses on the liabilities is equal and opposite to 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” (B134).

If contracts no longer qualify for direct participation in some periods then the amount accumulated in OCI is included as a reclassification adjustment in P&L (This is based on the amount previously included and is not recalculated for the approach now applying, or the new assumptions B136).

i. if the entity had previously applied paragraph 88(b)—the entity shall include in profit or loss the accumulated amount included in other comprehensive income before the change as if the entity were continuing the approach in paragraph 88(b) based on the assumptions that applied immediately before the change; and

ii. if the entity had previously applied paragraph 89(b)—the entity shall include in profit or loss the accumulated amount included in other comprehensive income before the change as if the entity were continuing the approach in paragraph 89(b) based on the assumptions that applied immediately before the change.
No restatement of prior periods is required (B135).

8.30. How does the OCI option apply for other participating contracts?

For contracts with discretionary features for which changes in assumptions that relate to financial risk have a substantial effect on the amounts paid to the policyholder but which are not directly participating, the disaggregation is based on a systematic allocation of the expected total finance income or expenses over the duration of the group of insurance contracts. The systematic allocation is based on characteristics of the contracts, without reference to factors that do not affect the cash flows expected to arise under the contracts i.e., if expected recognised returns on assets do not affect the cash flows of the contracts in the group, the impact of those returns is excluded (see B132(a)).

The systematic allocations are also such that over the duration of the groups of contracts that total amount recognised in OCI is zero. This means that when a contact matures the carrying amount of the group of contracts is equal to the amount measured using the systematic allocation (B130).

The systematic allocation of the future cashflows can be determined in one of two ways:

(i) 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; or

(ii) 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.

The effective yield approach is defined in the illustrative examples (IE 159):

Applying paragraph B132(a)(i), the entity uses 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 (an ‘effective yield approach’). The effective yield approach is not the same as the effective interest method as defined in IFRS 9 Financial Instruments.

If the financial assumptions remain the same through the years (i.e., no changes related to future cash flows), the calculated effective yield will remain the same. However, if the financial assumptions change a revised effective yield will need to be calculated. The amount going through the insurance finance income/expense in the P&L will be calculated using this effective yield rather than the initial discount rate. The difference between this and the total impact will go through OCI.

The second of these is the crediting rate approach and is defined in the illustrative examples (IE 165):
Applying paragraph B132(a)(ii), the entity uses an allocation based on the amounts credited in the period and expected to be credited in future periods (a ‘projected crediting rate approach’). In addition, applying paragraph B130(b), the entity needs to ensure that the allocation results in the amounts recognised in other comprehensive income over the duration of the group of contracts totalling to zero. In order to do so, the entity calculates a series of discount rates applicable to each reporting period which, when applied to the initial carrying amount of the liability equals the estimate of future cash flows. This series of discount rates is calculated by multiplying the expected crediting rates in each period by a constant factor (K).

Using the crediting rate approach requires at least the following steps:

1. Calculate the fair value of liabilities on current assumptions (in our example they increase when interest rates fall).
2. Solve for rates which “amortise” the difference between the new value and the original estimate, in proportion to how interest is credited.
3. This scaling factor then scales the future outstanding crediting rates up through time. This results in the movements on the liability side closely matching the movements on the asset side.
4. In all cases the OCI balance must be re-spread when conditions change, so that the outstanding OCI balance at the end is zero.

For the risk adjustment, if the risk adjustment is also disaggregated, the systematic allocation used is consistent with the allocation of the future cashflows.

For the CSM, the systematic allocation uses the discount rate used to accrete interest (locked-in rate) (B132).

Presentation and Disclosures

8.31. Are there any differences with respect to presentation for DPCs?

There are no specific presentation requirements for DPCs. See Chapter 15 for further details on presentation requirements.

8.32. Are there any additional disclosures required for DPCs?

For disclosures, an entity is required to explain the relationship between insurance finance income or expenses and the investment return on its assets (paragraph 110).

- The composition of the underlying items and their fair value is also disclosed (paragraph 111).
If risk mitigation is used and the CSM is not adjusted for some changes in the fulfilment cashflows the impact of this on the CSM is disclosed (paragraph 112).

If the basis for disaggregation of insurance finance income or expenses is changed then the period when the change occurred, the reason, any adjustments as a result and the carrying amount of the contracts to which the change applied are disclosed (paragraph 113).

See also chapter 15
Chapter 9 – Reinsurance

Before consulting this chapter, be sure to read the Introduction to this IAN, particularly the sections on References to IFRS 17, Materiality and Proportionality

9.A. What does this chapter address?

This chapter provides background and suggested practice on the treatment of reinsurance under IFRS 17. The note covers both reinsurance ceded (referred to as reinsurance “held” in IFRS 17) and reinsurance assumed (referred to as reinsurance “issued” in IFRS 17). As noted in paragraph 3, IFRS 17 is applicable to both reinsurance contracts held, and reinsurance contracts issued. For consistency with IFRS 17 terminology, reinsurance “held” and “issued” will be used in this note. Retrocession contracts are included in the definition of reinsurance contracts.

It is not applicable to reinsurance contracts that are considered to be Financial Instruments under IFRS.

9.B. Which sections of IFRS 17 address this topic?

As noted in paragraph 4, all references in IFRS 17 that refer to insurance contracts also apply to reinsurance contracts held unless otherwise indicated by specific reference to reinsurance issued or as specified in paragraphs 60-70 for reinsurance held.

9.C. What other IAA documents are relevant to this topic?

None
9.1. When is IFRS 17 used to account for reinsurance contracts?

A reinsurance contract is an insurance contract where one entity (the reinsurer) takes on all or part of the insurance risks issued by another entity. When an entity sends risks to another entity it is known as reinsurance ceded. When an entity receives risks from another entity it is known as reinsurance assumed. Where there is significant insurance risk transfer, the reinsurance contract is considered as an insurance contract under IFRS, and IFRS 17 is applicable (paragraph 3). This applies to both reinsurance held (the IFRS 17 terminology for a reinsurance ceded contract) and reinsurance issued (the IFRS 17 terminology for a reinsurance assumed contract).

IFRS outlines the criteria to determine whether there is significant insurance risk transfer under the contract (see question 9.2 below). Where a contract fails these criteria, IFRS 17 does not apply, and the reinsurance is treated as a financial instrument.

9.2. What constitutes significant insurance risk transfer for reinsurance?

To determine if IFRS 17 is applicable, for each reinsurance transaction that a company has in place, an assessment needs to be made as to whether there is significant insurance risk transfer under the contract. The criteria are covered in detail in paragraphs B7-B23. See Chapter 1 – classification of contracts.

Under IFRS, an insurance contract is one under which one party accepts significant insurance risk, other than financial risk, from another party by agreeing to compensate the other party if a specified uncertain future event (the insured event) adversely affects the other party.

Under IFRS, the insurance risk is significant if, and only if, an insured event could cause the insurer to pay additional benefits that are significant in any single scenario, excluding scenarios that lack commercial substance (i.e., have no discernible effect on the economics of the transaction). IFRS specifically says 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.

For reinsurance, there are two specific exceptions to the above general principles:

- Lapse, persistency or expense risk would not normally meet the criteria for insurance risk outlined above as, under paragraph B14, because the resulting variability in the payment to the is not contingent on an uncertain future event that adversely affects the policyholder. However, where risk that does not adversely affect the policyholder is mitigated by an entity by using a second contract to transfer some of all of these risks to another party, that party is exposed to insurance risk (paragraph B15). Therefore, a reinsurance contract that satisfies this criterion meets the definition of an insurance contract and hence is a reinsurance contract under IFRS 17. It should be recognised and measured as reinsurance issued and reinsurance held for the respective party.

- Even if a reinsurance contract does not expose the issuer of the contract to the possibility of a significant insurance loss, the contract is still deemed to transfer significant insurance risk if it transfers substantially all of the insurance risk relating to the reinsured portions of the underlying insurance contracts (paragraph B19).
Therefore, a reinsurance contract that meets this criteria can be considered as insurance contracts for both the entity issuing the contract and the entity that holds the reinsurance.

THE BALANCE OF THIS CHAPTER IS APPLICABLE ONLY TO REINSURANCE CLASSIFIED AS INSURANCE CONTRACTS UNDER IFRS

Reinsurance Held - (Questions 9.3 – 9.16)

9.3. How is reinsurance held presented in the IFRS statement of financial position and statement of financial performance?

Where an entity has entered into reinsurance contracts to cede insurance risk associated with underlying insurance contracts (either direct insurance contracts or reinsurance contracts issued), the reinsurance held contracts are recognised and presented on the balance sheet as groupings of reinsurance contracts held that are assets and groupings of reinsurance contracts held that are liabilities. This means that for the statement of financial position, the reinsurance held is shown separately from the underlying insurance contracts (paragraph 78). Similarly, for the statement of financial performance, the income and expense from reinsurance held are shown separately from the expenses and income of the underlying insurance contracts (paragraph 82).

9.4. Does reinsuring insurance contracts impact the recognition of the underlying insurance contracts?

No. Reinsurance does not impact the recognition of the underlying insurance contracts. As per paragraph 75, "when an entity buys reinsurance, it shall de-recognise the underlying insurance contract(s) when, and only when, the underlying insurance contract(s) is or are extinguished".

9.5. Does reinsuring insurance contracts impact the measurement of the underlying insurance contracts on the IFRS balance sheet?

No under IFRS 17, the valuation of insurance contracts issued by an entity is not impacted by entering into reinsurance contracts to mitigate risks in the contracts issued. The insurance contracts continue to be valued on a gross basis. Therefore, the estimates of future cash flows of a group of underlying insurance contracts would usually be the same regardless of whether there is reinsurance held associated with these obligations. This also applies to the entirety of the fulfilment cash flows, including the risk adjustment for non-financial risk, and the CSM.

It should be noted that an entity’s approach to diversifying its risk exposure, including potential use of reinsurance, may impact the gross risk adjustment. However, this would be an indirect impact based on the entity’s approach to using reinsurance generally to diversify risk, and not reflect a direct linkage for a specific reinsurance held treaty.

9.6. How are reinsurance contracts held measured?

The measurement of reinsurance held is represented by the fulfilment cash flows associated with the reinsurance held contract plus a CSM. The measurement value is
separately determined from the valuation of the fulfilment cash flows and CSM of the underlying gross insurance liabilities. See also questions 9.9 and 9.10.

While the valuation measurement follows the same General Measurement Approach as for insurance contracts generally, there are some key differences in the methodology.

With respect to the estimate of future cash flows, paragraph 63 requires consistency between the assumptions used in the measurement of the reinsurance contracts held and in the measurement of the underlying gross insurance liabilities (see question 9.9).

With respect to the risk adjustment, a different definition of the risk adjustment is used for reinsurance held that replaces the general definition used for insurance contracts (see question 9.9).

With respect to the CSM, there are specific additional considerations for reinsurance contracts held (see question 19.7.)

9.7. Does the asset or liability for reinsurance held have a CSM?

Assuming the PAA is not being used, a CSM is determined for reinsurance contracts held using a similar approach as for other insurance contracts. However, there is a key difference in that the CSM can both reduce the reinsurance held asset (i.e., present value of reimbursements from the reinsurance contract exceed the present value of reinsurance premiums) and therefore defer recognition of profit from the reinsurance contract, or increase the reinsurance held asset (i.e., present value of reinsurance premiums exceeds the present value of reimbursements from the reinsurance contract) and therefore defer recognition of losses from the reinsurance contract.

This means that the concept of an ‘onerous’ reinsurance held contract does not exist (see paragraphs 29 (b), 61 and 65). The rationale is that a net loss from the reinsurance contract would usually represent a commercial expense of purchasing reinsurance and would normally be spread over the period in which the service is received.

However, where there is a change in the fulfilment cash flows of a group of underlying insurance contracts that does not adjust the CSM for this group, the insurer similarly does not adjust the CSM on the reinsurance held asset for changes in fulfilment cash flows associated with these same underlying insurance contracts (see paragraph 66 (c) (ii)). This applies only for subsequent measurement, not for initial measurement.

This means that where an entity has transferred risk to a reinsurer, there is an attempt for subsequent measurement to create consistency in how changes in the fulfilment cash flows associated with the risks transferred is treated in the CSM of the reinsurance held and the gross insurance liabilities. However, there is no attempt to create similar consistency at initial measurement.

9.8. Would the future cash flow assumptions for business covered by reinsurance held be the same as the future cash flow assumptions used for the same business in the underlying insurance contract valuation?

Paragraph 63 states that ‘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.” This means that assumptions related to policyholder behaviour or insured decrements (e.g., mortality rates, morbidity rates, policyholder claims assumptions) would be consistent between the underlying insurance contract valuation and where these assumptions are used to help determine the value of the reinsurance held. Other assumptions, such as expenses may be different.

In addition, other variables and determinants of the cash flows, including the contract boundary, may be different depending on the terms of the reinsurance. See also question 9.11.

9.9. How is the reinsurance held risk adjustment for non-financial risk determined?

A specific definition for the determination of the risk adjustment for reinsurance contracts held is provided that replaces the general definition in paragraph 37 used for insurance and reinsurance contracts issued in the standard. Under the definition for reinsurance held, the quantum of the risk adjustment for non-financial risk represents the amount of risk being transferred by the holder of a group of reinsurance contracts to the issuer of those contracts (paragraph 64).

The risk adjustment for the reinsurance held can therefore conceptually be thought of as the difference in the risk position of the entity with (i.e., net position) and without (i.e., gross position) the reinsurance held. As a result, the appropriate risk adjustment for the reinsurance held could be determined based on the difference between these amounts.

For reinsurance held, because the risk adjustment for reinsurance held is defined based on the amount of risk transferred to the reinsurer, the risk adjustment for reinsurance held will normally create an asset. On this basis, where a reinsurance contract held is reported as an asset the risk adjustment will have the effect of increasing the value of the asset, and will decrease the liability value where the reinsurance contract held is reported as a liability.

9.10. How is counter party risk of non-performance by the issuer of reinsurance contracts reflected in reinsurance contracts held?

In determining the fulfillment cash flows, the estimates of future cash flows to be received for the reinsurance contracts held are reduced by an allowance for reinsurance counter party failure to fulfill the contractual obligations (paragraph 63). This allowance would reflect not only potential reinsurance counter party failure due to defaults (i.e., credit events), but would include allowances for disputes resulting in reduced payments as well reflecting the effects of collateral. Default allowances would normally reflect the current financial condition and credit standing of the reinsurance counter party, as well as the potential for these conditions to change over time. If the allowance for non-performance in the fulfillment cash flows is changed, then the change does not adjust the contractual service margin (paragraph 67).

With respect to the risk adjustment, the requirement in paragraph 64 that the risk adjustment for non-financial risk represents the amount of risk being transferred by the entity to the reinsurer has been interpreted two ways with respect to non-performance risk. One interpretation is that counter party risk is not considered in the risk adjustment as this is not a risk formally transferred by the contract. An alternative interpretation that has been put forward is that counter party risk is appropriate to consider in the risk adjustment since
this is a risk that, at an entity level, exists for the party with the reinsurance held as a result of entering the contract to transfer risk.

9.11. Would grouping of business for reinsurance held be the same as contract grouping used for the same business in the gross insurance liabilities?

The grouping for business covered by reinsurance held may be different than the contract grouping for the same underlying business in the gross insurance liabilities.

Under IFRS 17, contracts are normally grouped, although it is permissible to have one contract in a group. In addition, the general approach is that unless a contract contains components that would be within the scope of another standard if they were separate contracts, the contract is contemplated as the most basic unit of account.

A reinsurance contract is a single contract, even though it may consist of cessions of many underlying insurance contracts.

Because certain reinsurance contracts already aggregate risk and consolidate underlying contract exposures, it may in some circumstances make sense to make use of the permission to have one (reinsurance) contract in a group.

The grouping requirements for insurance contracts outlined in paragraphs 14 – 24 also apply for reinsurance, with the exception that for reinsurance contract held there is an additional paragraph, 61, to account for the fact that reinsurance contracts cannot be onerous. Paragraph 61 states that “An entity shall divide portfolios of reinsurance contracts held applying paragraphs 14 – 24, except that the reference to onerous contracts in those paragraphs shall be replaced with a reference to contracts on which there is a net gain on initial recognition. For some reinsurance contracts held, applying paragraphs 14 – 24 will result in a group that comprises a single contract”.

9.12. What are the considerations when a reinsurance held contract may cover multiple years of underlying insurance contracts or risk attachments?

For reinsurance held, a single reinsurance held contract may cover multiple years of underlying contract cessions or risk attachments. Some reinsurance held contracts, in addition to covering existing risks / cessions, are open to accepting future cessions / risk attachments. This leads to the question, when measuring the value of an existing group of reinsurance held contracts at a point of time T, what future cessions / risk attachments after time T are reflected in the modeling of the future cash flows in the fulfillment cash flows.

There are several relevant paragraphs in the standard.

Paragraph 33 states that “An entity shall include in the measurement of a group of insurance contracts all the future cash flows within the boundary of each contract in the group”.

Paragraph 34 states 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
A substantive obligation to provide services ends when:

a) 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

b) both of the following criteria are satisfied: (i) The entity has the practical ability to reassess the risks of the portfolio of insurance contracts that contains the contract and, as a result, can set a price or level of benefits that fully reflects the risk of that portfolio; and (ii) the pricing of the premiums for coverage up to the date when the risks are assessed does not take into account the risks that relate to periods after the reassessment date.”

The above wording in paragraph 34 is written from the perspective of a directly written insurance contract and must be interpreted for reinsurance held contracts. An interpretation that has been put forward for reinsurance contracts held is that cash flows are within the contract boundary for a reinsurance held contract if they arise from substantive rights and obligations that exist during the reporting period in which the ceding entity is compelled to pay amounts to the reinsurer or in which the entity has a substantive right to receive services from the reinsurer.

The implications of the above paragraphs in the standard might best be given by examples.

Consider 2 possible non-proportionate reinsurance held contracts each, for the sake of simplicity, considered a separate “group” of 1 contract.

Contract A is a reinsurance contract held where existing risks are covered until they expire at guaranteed rates. The treaty is open to new risk attachments but the reinsurer and cedent can terminate the treaty accepting new risks at any time.

The implication is that at any valuation date T that falls within the contract boundary, the insurer would project future cash flows related to the existing risk attachments, and would not project future risk attachments since there is no contractual obligation from either party to continue to accept new risks into the treaty. At time T+1, the cash flows of the reinsurance contract held would include the projections of cash flows for all risk attachments up to time T+1 (i.e., risks that attach between T and T+1 would be included and reflected as changes in estimates of the fulfillment cash flows).

Contract B is a reinsurance contract held where existing risks are covered until they expire at guaranteed rates. The treaty is open to new risks at guaranteed rates for at least the next 3 years, after which the reinsurer can terminate accepting new risks.

The implication is that at any valuation date T that falls within the contract boundary, the insurer would project future cash flows related to the existing risk attachments, and would also project future risk attachments for risks for the next 3 years because the reinsurer has contractually agreed to accept those risks by locking in guaranteed rates. At time T+1, the cash flows of the reinsurance contract held would include the projections of cash flows for all risk attachments up to time T+1, including true up of cash flows for actual versus expected for risk attachments between T and T + 1, plus updated projected cash flows for future risk attachments for the next 2 years.
There are other implications to be considered.

- The future cash flows included may impact the ability to use the PAA. Where a reinsurance contract is intended to cover multiple years of cessions / risk attachments, it may prove more difficult to prove eligibility to apply the PAA for contracts where the coverage period for the underlying contract is only 1 year, but new risks attach after the inception date.

- The IFRS 17 application guidance states that, when determining the discount rates for initial recognition, “an entity may use weighted-average discount rates over the period that contracts in the group are issued, which applying paragraph 22 cannot exceed one year” [paragraph B73]. When a reinsurance contract covers multiple cession years and all cession years are considered as part of the same contract for purposes, the interpretation that discount rates may only take into account interest rates during the initial year that a contract is in-force may produce an economic mismatch when a reinsurance contract is open for multiple years and new cessions are added in subsequent years after the initial contract year.

- There are additional considerations related to the cash flows to include in the modelling for proportionate reinsurance contracts (see question 9.13)

9.13. Are there special considerations for the initial recognition of proportionate Reinsurance Held?

There are additional considerations related to proportionate reinsurance held contracts.

Paragraph 62 states that “Instead of applying paragraph 25, an entity shall recognize a group of reinsurance contracts held: (a) if the reinsurance contracts held provide proportionate coverage – at the beginning of the coverage period of the group of reinsurance contracts held or at the initial recognition of any underlying contract, whichever is later; and (b) in all other cases – from the beginning of the coverage period of the group of reinsurance contracts held.”

Two views on the meaning of Paragraph 62(a) for proportionate reinsurance have been put forward. The first interpretation is that the additional consideration that there is no recognition until at least the first underlying contract is recognised applies only to the initial recognition of the group of reinsurance held contracts. It does not impact which cash flows are modeled once the group of reinsurance held contracts is initially recognised – that is, all future cash flows expected to be within the contract boundary are modeled regardless of whether the underlying contracts have been recognised. The second interpretation assumes that this additional consideration is broader and means that only cash flows associated with underlying contracts that have been recognised are modeled (i.e., future cash flows associated with underlying cessions that have not yet been recognised are not modeled).

Under Paragraph 62(b), for non-proportionate reinsurance all future cash flows expected to be within the contract boundary are modeled without reference to the status of underlying contracts.
9.14. What is a proportionate reinsurance coverage?

Proportionate reinsurance is not a defined term in IFRS 17. In the Basis for conclusions, which is not a part of the standard, there is a reference to the distinction between proportionate versus non-proportionate reinsurance [paragraph BC304]. “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 aggregate losses from a group of underlying contracts that exceed a specified amount”.

9.15. Can the PAA be used for reinsurance contracts held?

Yes, reinsurance contracts held are eligible for the PAA provided they meet the criteria to use the approach (paragraph 69). The criteria to use the PAA, such as coverage period of the contracts in the group, need to reflect the contractual terms of the reinsurance contracts held in the group, and not the underlying insurance contracts.

9.16. Are there potential economic mismatches between the measurement of a reinsurance contract held and the measurement of associated underlying insurance?

There are several areas of possible economic mismatch.

For reinsurance contracts held, the contract boundary definition means that the measurement of reinsurance contracts held will typically extend to include cash flows associated with future projected cessions up to the point at which the reinsurance contract can be exited for new business. The valuation of underlying insurance contracts will not include any cash flows related to these future projected cessions, since the underlying insurance contracts are only valued as written. This creates a mismatch in terms of timing of recognition of cessions versus underlying contracts.

For underlying contracts, losses are recognised at inception when contracts are onerous at inception, whereas any offsetting net gain on related reinsurance contracts held will be reflected in the CSM and recognised over the lifetime of the reinsurance contract held. This can create a mismatch in terms of timing of profit and loss on contracts that may be economically linked (e.g., pricing of underlying contracts frequently reflects impact of associated reinsurance, particularly for proportionate coverages).

Underlying contracts may use the Variable Fee approach, while associated reinsurance held contracts are not eligible to use the Variable Fee approach. This can create measurement mismatches due to significant differences in treatment of investment related impacts.

Reinsurance Held and Reinsurance Issued (Questions 9.17 – 9.20)

9.17. Would the contract boundary used for reinsurance issued and reinsurance held for the same contract necessarily be the same?

The contract boundary would normally be the same for both parties. This is because the contract boundary is determined by looking at the substantive rights and obligations of both parties to the contract.
9.18. How are contractual options such as recapture, cancellation, or commutation treated in developing reinsurance cash flows?

The cash flows would reflect characteristics of the reinsurance contract. Reinsurance treaties may contain options that may be exercised at the discretion of the party holding or issuing the contract. The cash flows might assume that the entities issuing and holding the reinsurance contract each exercises its control over such options to its advantage taking into account any other considerations with respect to expected behaviour. Advantage would be determined based on the assumptions used in the valuation.

9.19. Can Reinsurance contracts qualify as insurance contracts with direct participation features?

Reinsurance contracts, including both reinsurance held and reinsurance issued cannot qualify as insurance contracts with direct participation features (paragraph B109). Therefore, they cannot use the CSM approach outlined for contracts with direct participation features.

9.20. How should continuation of a reinsurance contract past a contract boundary be treated?

Under IFRS 17, two fundamentally different approaches have been put forward for the situation where a reinsurance contract with a contract boundary is extended beyond the original boundary through the exercise of contractual terms – for example, continuation of a fully cancellable reinsurance treaty with guaranteed premiums past the cancellation exercise date which created the boundary. Under one approach, the continuation would extend the contract boundary of the original contract and the impact reflected as changes in the fulfillment cash flows of the contract. Under the second approach, the continuation would be treated as a new contract with a new contract boundary.

The treatment as a change in fulfillment cash flows of an existing contract is based on the following considerations:

- It is consistent with Paragraph B64 which states that “in determining the estimates of future cash flows at the end of a reporting period, an entity shall reassess the boundary of an insurance contract to include the effect of changes in circumstances on the entity’s substantive rights and obligations”.

- It is consistent with the approach outlined in paragraphs 72 and 73 for treatment of various forms of contract modifications. Under these paragraphs, such renewal impacts would not meet the threshold for recognition of a new contract and would be considered as changes in the estimates of fulfillment cash flows. Interpretation is based on the modification and derecognition paragraphs 72 and 73. Under paragraphs 72, there is the statement that “the exercise of a right included in the terms of a contract is not a modification”. As such, changes in cash flows due to exercise of contractual rights would be considered as changes in the estimates of fulfillment cash flows by applying paragraphs 40-52 and not a new contract event.

- While paragraph 35 states that “an entity shall not recognise as a liability or as an asset any amounts relating to expected premiums or expected claims outside the boundary...
of the insurance contract. Such amounts relate to future insurance contracts”, this requirement is interpreted to mean that such cash-flows are not currently considered, but such assessment is not permanent and can change as substantive rights and obligations change.

The treatment as a new contract is based on a stricter interpretation of the paragraph 35 statement that “an entity shall not recognize as a liability or as an asset any amounts relating to expected premiums or expected claims outside the boundary of the insurance contract. Such amounts relate to future insurance contracts”.

Reinsurance Issued (Questions 9.21 – 9.23)

9.21. How is reinsurance issued presented on the IFRS balance sheet?

Where an entity has entered into reinsurance contracts to assume risk and obligations, the value of these contracts is shown on the balance sheet as part of the insurance liabilities or assets, with contracts grouped into those that are assets, and those that are liabilities.

9.22. Are there special considerations for reinsurance issued liabilities?

In general, reinsurance issued business, once classified as insurance risk, is treated consistently in approach with all other gross insurance liabilities issued.

Data issues are frequently more prevalent for reinsurance issued business, particularly life reinsurance, than for underlying insurance business, as the reinsuring entity is further removed from the underlying risks than the ceding entity, and is reliant on the entity company for underlying data on insured risks. This means that there is frequently more use of approximations both in terms of data and modeling approach. It is important that actuaries performing valuations of reinsurance issued business understand the impact of approximations made and be able to assess their reasonableness.

9.23. What are the considerations when a reinsurance issued contract may cover multiple years of underlying insurance contracts or risk attachments?

For reinsurance issued, a single reinsurance held contract might cover multiple years of underlying contract cessions or risk attachments, so that in addition to covering existing risks / cessions, treaties might be open to accepting future cessions / risk attachments.

This leads to the question, when measuring the value of an existing group of reinsurance issued contracts at a point of time T, what future cessions / risk attachments after time T should be reflected in the modeling of the future cash flows in the fulfillment cash flows.

The considerations and relevant paragraphs in the standard are similar to reinsurance held as covered in question 9.12.

Other Questions
9.24. What additional explanations and disclosures may be included in the actuary’s report related to reinsurance?

The objective of additional disclosure requirements is to enable the Board and management to better understand the way in which the actuary has undertaken his or her work. Key elements of this related to reinsurance, may include:

- discussion of the impact of reinsurance as part of risk mitigation considerations to determine the company’s risk profile;
- discussion of any uncertainty in relation to recoverability of reinsured amounts;
- discussion of the insurer’s net risk profile and how this is appropriately reflected as the difference between the gross and reinsurance risk adjustments.
Section C – Uses of fair value measurement in IFRS 17

This section considers the use of the fair value measurement of insurance contracts for IFRS 17 including for business combinations or portfolio transfers and on transition if the fair value approach is chosen. This section comprises three chapters:

- Fair Value – Chapter 10
- Business Combinations and Portfolio Transfers - Chapter 11
- Transition – Chapter 12

Chapter 10 discusses the principles of how to determine the fair value of insurance contracts in the context of the more general guidance on fair value measurement found in IFRS 13 Fair Value Measurement and of common insurance industry practices.

Chapter 11 discusses the requirements under IFRS 17 when accounting for insurance contracts or liabilities for incurred claims acquired in a business combination or a portfolio transfer, and in particular the need to use the fair value of the contracts as the initial consideration.

Chapter 12 discusses the one-time event of presenting statements applying IFRS 17 for the first time a section for each of the three transition approaches described in IFRS 17 – the retrospective approach of IAS 8 and the alternative approaches introduced by IFRS 17, modified retrospective and fair value.
Chapter 10 – Fair Value

Before consulting this chapter, be sure to read the Introduction to this IAN, particularly the sections on References to IFRS 17, Materiality and Proportionality

10.A. What does this chapter address?

This Chapter considers the fair value measurement of contracts in IFRS 17 in the context of the more general guidance on fair value measurement found in IFRS 13 Fair Value Measurement and of common insurance industry practices.

10.B. Which sections of IFRS 17 address this topic?

Paragraphs 39 and B94 specify the use of fair value when contracts are acquired in a business combination. Paragraphs C5 and C20-24 discuss the use of fair value on transition to IFRS 17.

10.C. What other IAA documents are relevant to this topic?

Chapter 12 Transition.
10.1. When is fair value measurement applied to insurance contracts? 

In IFRS 17, fair value measurement is used:

(a) at initial recognition of contracts acquired in a business combination. The fair value is determined as of the date of the acquisition. See Chapter 11, and

(b) on transition to IFRS 17 when the fair value approach (paragraph C5b) is selected. The fair value is determined as at the transition date, which is usually the beginning of the period immediately preceding the date of initial application of IFRS 17. See Chapter 12.

For insurance contracts acquired in a business combination, IFRS 17 states that the fair value of the contracts is the consideration received for those contracts (paragraph B94). Business combinations may include other assets and liabilities, in which case the consideration received for the insurance contracts needs to be determined separately from other assets and liabilities acquired, and may exclude certain factors that might be considered in a business combination (see Question 10.4).

This Chapter addresses fair value measurement in the context of business combinations where the consideration received for the insurance contracts is estimated and in the context of transition to IFRS 17. This Chapter may also be useful in the context of contracts acquired in a transaction that does not form a business combination where the fair value of groups of contracts is used to allocate the total consideration for the entire block of contracts to the groups.

Fair value measurement is also used to measure embedded derivatives that are separated from insurance contracts and for financial instruments issued by insurers, which are not in the scope of IFRS 17. These applications of fair value measurement are not addressed in this Chapter.

10.2. What is the fair value of insurance contracts?

IFRS 17 does not provide guidance on determining the fair value of insurance contracts, except as noted below in relation to a demand deposit floor. IFRS 13 Fair Value Measurement provides guidance when other IFRSs require fair value measurement, with certain exceptions. Insurance contracts are not specifically excluded from the scope of IFRS 13, and consequently IFRS 13 is relevant to insurance contracts. IFRS 13 does not provide specific guidance on insurance contracts; hence the entity is left to consider how to apply the guidance in IFRS 13 to insurance contracts.

IFRS 13 defines fair value as:

“...the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date.”
(paragraph 9 of IFRS 13)

17 The term “insurance contracts” as used in this Chapter includes all contracts in the scope of IFRS 17
A comprehensive discussion of IFRS 13 is beyond the scope of this Chapter. What follows are the relevant considerations of IFRS 13 as they apply to insurance contracts.

<table>
<thead>
<tr>
<th>IFRS 13 Fair Value Measurement</th>
<th>Application to insurance contracts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IFRS 13 requirement</strong></td>
<td><strong>Prices for insurance contracts are rarely observable. In most cases the fair value of insurance contracts needs to be estimated. See Question 10.3.</strong></td>
</tr>
<tr>
<td>The price may be observable but if it is not, it must be estimated (paragraph 2 of IFRS13).</td>
<td>Measurement from the perspective of a market participant may be different from the measurement of fulfilment cash flows (Paragraph 57 of IFRS13). See Questions 10.4 and 10.5.</td>
</tr>
<tr>
<td>Fair value is a market-based measurement, not an entity-specific measurement (paragraph 2 of IFRS13). Fair value should be measured using the assumptions that market participants would use (paragraph 22 of IFRS13).</td>
<td>Current market conditions refer not only to general economic conditions (e.g., interest rates) but also to the state of the market for transfers of insurance contracts, which may be difficult to determine. See Question 10.4.</td>
</tr>
<tr>
<td>The objective is to estimate the price under current market conditions (paragraph 2 of IFRS13).</td>
<td>The distinction between the principal market and the most advantageous market for insurance contracts may not make a difference. Market participants are likely to be limited to other insurers or reinsurers that would be able to complete a transaction.</td>
</tr>
<tr>
<td>The price is based on a hypothetical transaction in the principal market or, if there is no principal market, in the most advantageous market (paragraph 16 of IFRS13).</td>
<td>In IFRS 17, the unit of account for recognition and measurement of the liability is groups of insurance contracts, as that is described in the Standard. (see also chapter 5). The fair value would similarly be measured by groups of insurance contracts.</td>
</tr>
<tr>
<td>The unit of account is determined in accordance with IFRS 17 (paragraph 14 of IFRS13) and is the level at which an asset or a liability is aggregated or disaggregated for recognition purposes (IFRS 13 Appendix A).</td>
<td></td>
</tr>
</tbody>
</table>
### IFRS 13 Fair Value Measurement

<table>
<thead>
<tr>
<th>IFRS 13 requirement</th>
<th>Application to insurance contracts</th>
</tr>
</thead>
<tbody>
<tr>
<td>When a price for a liability is not available and the identical item is held by another party as an asset, fair value is measured from the perspective of market participant that holds the asset (paragraph 37 of IFRS13).</td>
<td>For this purpose, policy owners are not considered to be market participants. Furthermore, the price associated with a viatical settlement would not be relevant to the measurement of fair value of a group of insurance contracts.</td>
</tr>
<tr>
<td>Non-performance risk, (which includes consideration of credit standing) is reflected in the fair value measurement of a liability (paragraph 42 of IFRS13).</td>
<td>Fair value measurement reflects non-performance risk of the entity, however, the measurement of fulfilment cash flows under IFRS 17 does not. See Question 10.5.</td>
</tr>
<tr>
<td>There is a demand deposit floor on the fair value of financial liabilities (paragraph 47 of IFRS13).</td>
<td>IFRS 17 states that a demand deposit floor does not apply when the fair value of insurance contracts is determined. (paragraph B94 (business combinations) and C20 (transition)). See Question 10.5.</td>
</tr>
<tr>
<td>When price is not observable, the entity measures fair value using another valuation technique that maximizes the use of relevant observable inputs and minimizes the use of unobservable inputs (paragraph 3 of IFRS 13). An entity shall use valuation techniques consistent with one or more of the market approach, the cost approach and the income approach to measure fair value (paragraph 62 of IFRS 13).</td>
<td>Actuarial valuation techniques such as embedded values, actuarial appraisals and other present values techniques appear to be consistent with the income approach to measure fair value (paragraph B19 of IFRS 13), but may need to be adapted for the purpose of IFRS 17. See Questions 10.5 and 10.6.</td>
</tr>
</tbody>
</table>
## IFRS 13 Fair Value Measurement

<table>
<thead>
<tr>
<th>IFRS 13 requirement</th>
<th>Application to insurance contracts</th>
</tr>
</thead>
<tbody>
<tr>
<td>IFRS 13 has a hierarchy of inputs to valuation techniques used to measure fair value (paragraphs 72-90 of IFRS 13):</td>
<td>Fair value measurement of insurance contracts would usually require Level 3 inputs, especially with respect to non-market variables, and hence are likely to be characterized as Level 3.</td>
</tr>
<tr>
<td>• Level 1: Observable quoted prices, in active markets</td>
<td></td>
</tr>
<tr>
<td>• Level 2: Quoted prices are not available, but the input is based on observable market data</td>
<td></td>
</tr>
<tr>
<td>• Level 3: Unobservable inputs</td>
<td></td>
</tr>
<tr>
<td>The asset or liability being measured is characterized by the highest input level.</td>
<td></td>
</tr>
<tr>
<td>IFRS 13 has a number of disclosure requirements related to fair value measurement after initial recognition (paragraphs 91-99 of IFRS 13).</td>
<td>Fair value measurement of insurance contracts only takes place at an initial date (acquisition date or date of first reporting on transition), and therefore the disclosure requirements of paragraphs 91-99 of IFRS 13 may have limited applicability.</td>
</tr>
</tbody>
</table>

### 10.3. How is the fair value of insurance contracts calculated?

IFRS 13 does not prescribe a valuation technique. In the context of a business combination, the entity may have an analysis of value that can form the basis of the fair value measurement, perhaps requiring adjustment to be consistent with the objective of an exit price.

The application guidance in Appendix B of IFRS 13 provides information about other possible valuation techniques. Among them are present value techniques (paragraphs B12-B30 of IFRS 13) for the fair value measurement of a stream of cash flows. These techniques share many characteristics with the IFRS 17 guidance on measuring fulfilment cash flows (e.g., paragraph B23 of IFRS 13) and therefore are candidates for the estimation of fair value of insurance contracts under IFRS 17.

An approach to estimating fair value of a group of insurance contracts using a present value technique is to adjust the fulfilment cash flows of the group of insurance contracts in order to fulfil the objectives of IFRS 13. Adjustments to reflect the perspective of market participants (i.e., to move to an exit price) are discussed in Question 10.5.
IFRS 13 does not specify that a fair value estimate be before-tax or after-tax. However, there is a general admonition that valuations should be internally consistent, with specific mention that this general principle means that after-tax cash flows are discounted with an after-tax rate, and pre-tax cash flows are discounted with a pre-tax rate.

10.4. How would IFRS 13 Level 1 and 2 inputs (observable market information) be applied?

Market transactions involving insurance contracts may provide information about fair value, and the estimated fair value should be consistent with observable market information where available. However, it is unlikely that a direct relevant market price would be found. Furthermore, the transaction price at which a group of insurance contracts is exchanged may include factors (such as those in paragraph B4 of IFRS 13) that would be ignored for the purpose of estimating the fair value of a group of insurance contracts. Factors specific to insurance contracts that would be ignored include, for example:

- Expected profits/losses associated with cash flows beyond the boundaries of the insurance contracts,
- Expected profits/losses associated with investment/service components that will be recognized and measured separately from the group of insurance contracts, and
- Expense, tax or other synergies that a particular market participant might expect to realize, but that would not be generally available in the principal market.

Information that would be relevant, if reasonably available, might include:

- Market view of expected expenses associated with fulfilling the obligations of the insurance contracts in the group,
- Market view of the cost of risk associated with taking on the obligations of the insurance contracts in the group, and
- Market view of the cost of reinsurance that would be required to take on the obligations of the insurance contracts in the group.

IFRS 13 requires the entity to maximize the use of relevant observable inputs (paragraphs 3, 36, 61 & 67 of IFRS 13). However, an entity need not undertake exhaustive efforts to obtain information about market participant assumptions and may use information that is reasonably available (paragraph 89 of IFRS 13).

10.5. When using a present value approach, what adjustments would be made to fulfilment cash flows to satisfy the objectives of fair value measurement?
When using a present value approach, the fair value of a group of insurance contracts can be seen as the fulfilment cash flows adjusted to take into account the perspective of market participants (i.e., move to an exit price).

Possible adjustments that could be made include the following:

- The discount rates applied to the estimates of future cash flows (paragraph B14c of IFRS13) are increased to reflect the entity’s own credit risk (paragraph B13f of IFRS13).

- Where consistent with market practice, the discount rates applied to the estimates of future cash flows are adjusted to reflect the perspective of market participants on the liquidity characteristics of the group of insurance contracts.

- Where different from the entity’s view, projected expense cash flows reflect the market view of the expenses associated with fulfilling the obligations of the group of insurance contracts. For example, where consistent with market practice, expense cash flows are increased to cover a reasonable level of general expenses (i.e., expenses not directly attributed to the portfolio to which the group of insurance contracts belongs).

- Where different from the entity’s view, other assumptions used in cash flow projections are adjusted to reflect the market view. For most assumptions, the market view are likely to be the same as the entity’s view because the entity has the best information available and the fulfilment cash flows take into account all relevant available information. However, for assumptions that are not specific to the entity or its contracts (e.g., future population mortality improvement), the market view might differ from the entity’s view.

- Where different from the entity’s view, the risk adjustment for non-financial risk is adjusted to reflect a degree of risk aversion (paragraph B83b of IFRS 17) consistent with the market view.

- Where different from the entity’s view, the degree of diversification benefit (paragraph B83a of IFRS 17) included in the risk adjustment for non-financial risk is adjusted to be consistent with the market view. As noted in Question 10.2, the unit of account for fair value measurement under IFRS 17 is group of insurance contracts.

- Where consistent with market practice (and where not otherwise reflected in the estimate of fair value), the risk adjustment is increased to include the cost of capital or risks not covered in the fulfilment cash flows.

- Where consistent with market practice (and where not otherwise reflected in the estimate of fair value), the fair value is decreased to reflect expense, tax, or other synergies that would be available in the principal market.
Where not included in the other points above, the return that a market participant would require for undertaking the activity (see paragraph IFRS 13.41 and B31), which could be interpreted to include profit margins that a third party would require for providing services attached to the contract.

10.6. How do embedded values or appraisal values compare to fair values?

Embedded values or appraisal values are typically determined in the context of a transfer of liabilities together with supporting assets, and consider the present value of future expected profits less the cost of capital.

The fair value of insurance contracts under IFRS 17 is the fair value of the liabilities only, i.e., ignoring the supporting assets. Therefore, embedded / appraisal values will not be directly relevant to fair value measurement under IFRS 17 because they measure the profit expected from liabilities together with assets rather than the amount of assets that would be required to take over the obligations (liabilities) of the contracts.

However, embedded / appraisal value calculations might provide some context to help assess the market view of the degree of risk aversion, cost of capital, or other factors affecting fair value measurement (see Question 10.5). For example, a high hurdle rate for the present value of future profits is likely to suggest a high cost of capital.

10.7. Can a group of insurance contracts be onerous on acquisition?

A group of insurance contracts would be onerous if the fair value is less than the fulfilment cash flows. This may be unusual under the present value approach described in this Chapter, as most of the adjustments noted in Question 10.5 contribute to the fair value being higher than fulfilment cash flows. However, there may be circumstances in which market conditions conspire to make the fair value less than the fulfilment cash flows, so this possibility would not be disregarded.

10.8. Are there any special considerations for estimating the fair value of insurance contracts with direct or indirect participation features?

The general approach is the same as for contracts without participation features. Adjustments made to fulfilment cash flows (Question 10.5) would reflect the participation features of the insurance contracts. In particular, if discount rates applied to cash flows that vary based on the returns on underlying items have been adjusted to reflect that variability (paragraph B74b), the discount rates used for fair value measurement would be similarly adjusted.

Alternatively (equivalently), the fair value of a group of insurance contracts could be estimated as the fair value of the groups’ share of the underlying items with adjustments as needed to account for the non-participating features of the contracts in the group.

10.9. Are there any special considerations for estimating the fair value of reinsurance contracts?

The general approach is the same as for direct written contracts. The market for reinsurance contracts would be related to the market for the contracts that are reinsured, as transactions involving reinsurance contracts are usually part of transactions involving

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the reinsured contracts. With this perspective, the fair value of a group of reinsurance contracts can be viewed as the amount that brings the fair value of the reinsured (underlying direct) contracts to the net fair value of the direct contracts combined with the reinsurance contracts. In other words, the fair value of a group of reinsurance contracts is the difference between the fair value of the underlying direct contracts (ignoring reinsurance) and the fair value of the underlying direct contracts combined with the reinsurance contracts.
Chapter 11 – Business Combinations and Portfolio Transfers

Before consulting this chapter, be sure to read the Introduction to this IAN, particularly the sections on References to IFRS 17, Materiality and Proportionality

11.A. What does this chapter address?

This Chapter considers the requirements under IFRS 17 when accounting for insurance contracts or liabilities for incurred claims acquired in a business combination or a portfolio transfer, and in particular the need to use the fair value of the contracts as the initial consideration. This Chapter considers the interaction between IFRS 17 and the more general guidance found in IFRS 3 Business Combinations and discusses aspects of business combinations, such as the determination of goodwill and the recognition of intangible assets

11.B. Which sections of IFRS 17 address this topic?

Paragraphs 39, 108, and B93 - 95 provide guidance on this topic. Paragraph B5 may be relevant. Appendix D delineates concomitant amendments to IFRS 3 Business Combinations.

11.C. What other IAA documents are relevant to this topic?

Chapter 10 Fair Value is directly relevant. Contracts acquired in a business combination or in a portfolio transfer are measured by approaches consistent with the approaches used by the acquiring entity.
11.1. What are the general requirements of IFRS 3 for accounting for a business combination?

IFRS 3.4 requires the acquisition method of accounting to be applied to business combinations within its scope. The acquisition method views a business combination from the perspective of the acquirer. The acquirer purchases the assets and assumes the obligations of the seller. The measurement of the acquirer's assets and liabilities that existed before the acquisition is not affected by the transaction.

IFRS 3.5 describes the acquisition method as comprising four steps:

- Identifying the acquirer,
- Determining the acquisition date,
- Recognising and measuring the identifiable assets acquired and the liabilities assumed,
- Recognising and measuring goodwill or a gain from a bargain purchase.

Identifying the acquirer and determining the acquisition date are sometimes complex matters that do not require actuarial expertise. These issues are not in the scope of this IAN. Guidance can be found in IFRS 3.7, which in turn refers to IFRS 10 Consolidated Financial Statements, and in IFRS 3, B13-B18.

This chapter is primarily concerned with step 3 as it relates to insurance contracts and for acquisitions that do not form a business combination. There are some paragraphs and an appendix that provide some information about the other aspects of steps 3 and 4 to help the actuary understand the broader context in which the measurement of insurance contracts assets and liabilities is taking place.

11.2. What are the requirements of IFRS 17 for insurance contracts acquired in a business combination or in a transfer of contracts that do not form a business?

IFRS 17 provides guidance on the treatment of contracts acquired in a business combination or in a transfer of contracts that do not form a business combination. The distinction between a business combination and a transfer of contracts that does not form a business is discussed below. The application of the broader, non-insurance specific, guidance relating to business combinations and other acquisitions of assets or liabilities is discussed further in later sections of this chapter. The insurance-specific guidance in IFRS 17 relates to determining the initial Contractual Service Margin (CSM) for acquired contracts. According to paragraphs B93-B95

- the recognition date of the acquired contracts is the date of the business combination or of the transfer
- the initial consideration received or paid for the contracts acquired is a proxy for the premiums received. The consideration excludes amounts paid for any other assets or liabilities acquired in the transaction. In a business combination, in many instances the initial consideration is the fair value of the contracts (see Chapter 15 - Fair Value)
- the CSM for acquired contracts is calculated using the consideration as a proxy for the premium paid or received on the acquisition date. In a business
combination, if the contracts are onerous, the difference between the consideration for the contracts and the fulfillment cash flows forms a loss component and is recognised as part of goodwill. If the transfer of contracts does not form a business combination, the entity records a loss in the current period for the difference and establishes a loss component for the contracts.

The implication of these paragraphs is that the general requirements of IFRS 17 apply to insurance or reinsurance contracts acquired in a business combination or a transfer and that the fair value of the contracts is used in the determination of goodwill in a business combination. The effect of this implication is that the entity examines contracts acquired in a business combination or a transfer to determine which are in the scope of IFRS 17, and then applies the guidance in IFRS 17 on measurement, presentation and disclosure to those contracts. There is not a presumption that a contract is insurance at the recognition date, even if it had been classified as insurance by the seller. For example, contracts that had been determined to be insurance contracts at the time that they originated, but, at the acquisition date, no longer transfer significant insurance risk, would not be in the scope of IFRS 17 for the purposes of the acquirer. See also Chapter 1—Classification of Contracts.

As noted, the consideration is used in determining the CSM for contacts that do not use the Premium Allocation Approach (PAA). For contacts that use the PAA, the consideration represents the remaining unallocated premium of the relevant contracts.

Liabilities for claims incurred on contracts issued by the acquired entity do not have a CSM. IFRS 17 is generally construed to mean that the acquisition of claims liabilities constitutes the issuance of a contract that transfers the risk of adverse development to the acquirer. In some cases, the fair value and the fulfillment cash flows do not differ. In these cases, there is no CSM. In other cases, the fair value exceeds the fulfillment cash flows. This difference can be viewed as the part of the consideration that compensates the acquirer for the service provided. Hence any positive difference between the fair value and the fulfillment cash flows of claims liabilities acquired in a business combination or in another transfer is deferred and released into income over the coverage period, i.e., the period over which the acquirer is obligated to adjudicate the claims.

It is possible that the fair value of acquired insurance contracts is less than the fulfillment value. This situation might occur, for example, if the market conditions were such that the market participants required a margin for risk and profit that was less than the entity's adjustment for risk. A contributing factor may be that the fact that a fair value considers the credit standing of the entity, whereas the fulfillment value does not. In this situation the acquired contracts are onerous. If the contracts are acquired as part of a business combination, there is a loss component but there is no effect on P&L because the amount by which the fulfillment value exceeds the fair value is considered in goodwill. If the acquisition of the contracts is not part of a business combination, the entity recognizes a loss for the difference and establishes a loss component, as it would for contracts it issues.

The guidance in IFRS 17 for acquired insurance and reinsurance contracts is consistent with the general guidance in IFRSs for business combinations. Most of the relevant guidance for business combinations is found in IFRS 3, Business Combinations (IFRS 3).
Additional relevant guidance is in IFRS 13 Fair Value Measurement (IFRS 13), in IAS 12 Income Taxes, and in IAS 38 Intangible Assets. The guidance in these IFRSs that may affect accounting for business combination or transfers is discussed further below.

11.3. What is a business combination and how does it differ from a transfer of insurance contracts?

IFRS 17 does not define the terms “business combination”. There is guidance for determining if a transaction is a business combination in IFRS 3, as discussed further below. For the purposes of this IAN, a transfer is a transaction involving contracts in the scope of IFRS 17 that may not constitute a business combination. Although not stated as such, the distinction likely makes no difference to the measurement of the assets or liabilities, but it may affect the goodwill and the tax accounting associated with the transaction.

11.4. What are the general requirements for determining if a transaction is a business combination?

IFRS 3 in effect defines a process that involves:

(a) Determining the nature of the transaction; i.e., determining whether it is a business combination or a different type of transaction,
   a) Applying the acquisition method of accounting to transactions that are business combinations
   b) Recognising and measuring the identifiable assets acquired and liabilities assumed
   c) Recognising and measuring goodwill or a gain from a bargain purchase.

The following questions expand on these topics and on related matters.

IFRS 3 defines a business combination as “A transaction or other event in which an acquirer obtains control of one or more businesses.” It goes on to state that transactions referred to as “true mergers” or “mergers of equals” are also business combinations. A “business” is an integrated set of activities and assets that is capable of being conducted and managed for the purpose of providing a return in the form of dividends, lower costs or other economic benefits directly to investors or their owners, members or participants. The “acquirer” is the entity that obtains control of the acquired. Appendix B of IFRS 3 provides further guidance on determining if the transaction constitutes the acquisition of a business and on identifying the acquirer.

For accounting purposes when there is a business combination, the “acquirer” is not always the entity which legally acquires the other entity. Under a “reverse acquisition”, the entity whose stock is being legally acquired is the “acquirer” for accounting purposes, while the entity which is legally the acquirer becomes the “acquired” for accounting purposes. For example, this can occur where a larger entity arranges to have itself bought by a smaller entity, perhaps due to a preference to utilize the common stock characteristics of the smaller entity. The actuary may want to rely on their principal’s accounting experts to determine who the acquirer and acquired entities are for accounting purposes.

11.5. What if the transaction is not a business combination?
IFRS 3 excludes from its scope the acquisition of an asset or a group of assets that does not constitute a business. In such cases the acquirer shall identify and recognize the individual identifiable assets acquired (including those assets that meet the definition of, and recognition criteria for, intangible assets in IAS 38 Intangible Assets) and liabilities assumed. The cost of the group shall be allocated to the individual identifiable assets and liabilities on the basis of their relative fair values at the date of purchase. (IFRS 3.2(b)). This guidance presents the possibility that the initial value of acquired assets or liabilities is different from their fair values.

11.6. How can the guidance in IFRS 3 for determining if a transaction is a business combination be applied to a transaction that involves contracts in the scope of IFRS 17?

One can conclude from IFRS 3 that the necessary conditions for defining a transaction involving insurance contracts as business combinations are:

- the portfolio or group of contracts must constitute a business or be part of a business; and
- control over the portfolio must be obtained as a result of the transaction.

The addition of individual or multiple contracts to an entity's book of business in a single transaction may not be sufficient to qualify as a business combination. The act of issuing contracts is unlikely to be considered an acquisition or a business combination. For example, the issuance of several individual contracts to a single owner (e.g., as in the case of corporate-owned life insurance) or purchases of individual contracts in a secondary market (e.g., viatical settlements) would not be considered a business combination. A business combination may include the right to issue future contracts using the same distribution system associated with the purchased block. However, any values directly associated with such rights to issue contracts are not reflected in the liabilities or other values of acquired contracts but may be recognised as intangibles associated with the business combination, as discussed further below. Even without the transfer of the right to issue future contracts, the potential of the net cash flows associated with a portfolio of insurance contracts to generate profits may be sufficient for it to be deemed a business.

The transfer of a block of business from one entity to another may be considered a business combination if the acquirer obtains control of the associated contracts. An acquisition is distinct from a reinsurance transaction, other than novation or assumption reinsurance, since an acquisition transfers control over all aspects of contracts, whereas a reinsurer has at most limited control over the contracts reinsured. For example, an insurer may buy an individual line of business of a multi-line entity by buying certain assets, taking on its obligations through assumption reinsurance and taking control of the sellers' distribution system. The insurer in this example does not buy the shares of the seller, but nonetheless has acquired a business and would account for the transaction as a business combination.

11.7. What are the transition rules applying to business combinations or portfolio transfers that occur(ed) before the effective date of IFRS 17?

The general guidance in IFRS 17 for transition applies to contracts in the scope of IFRS 17 acquired in a business combinations or other transfer. As discussed above, the recognition date of the acquired contracts is the date of the business combination or of the transfer.
Hence the transition does not require the entity to go back to the origination of the contracts, but rather to the date the entity acquired them. There is no need to restate any existing goodwill balances.

There may be business combinations that occurred before the effective date of IFRS 3 or that were acquired before the first-time adoption of IFRS. The IFRSs allow some exceptions to the application to IFRS 3 to these transactions. For example, if a company deemed a business combination to be a merger under guidance in effect before IFRS 3, the initial value of the contracts acquired may not have been their fair value. The recognition date for these contracts is the acquisition date, nonetheless, not the original inception date. IFRS 17 nonetheless seems to require that the initial value for transition be the fair value at the acquisition date (see paragraph C4a) if the full retrospective or modified retrospective approach is used, or at the transition date if the fair-value approach is used. There may be less evidence about the fair value of contracts at the acquisition date for these transactions (those for which acquired contracts had not been measured at fair value on the acquisition date) than for contracts that the entity measured at fair value on the acquisition date. The actuary may find that the fair-value approach is more appropriate for these contracts.
Appendix to Chapter 11

This Appendix provides further information about IFRS 3

What is the guidance in IFRS 3 for recognizing and measuring identifiable assets acquired and liabilities assumed in a business combination?

IFRS 3 requires the identifiable assets acquired and liabilities assumed in a business combination to be measured at fair value at the acquisition date (IFRS 3.10 and 3.18). There is an emphasis on recognizing all identifiable assets acquired and liabilities assumed, reflecting the Board’s desire for entities to fully consider the difference between identifiable intangible assets and goodwill. The treatment of goodwill (see further below) is different from the treatment of intangible assets with definite lives and the allocation of the purchase price among these items affects the emergence of future profits.

To qualify for recognition, identifiable assets and liabilities acquired

- must meet the definition of assets or liabilities (IFRS3.11); and
- must be part of what the acquirer and the acquiree exchanged in the business combination rather than the result of a separate transaction (IFRS 3.12). Examples of separate transactions that do not constitute part of the business combination include settlement of pre-existing relationship between the acquirer and acquiree and remuneration to employees or former owners of the acquiree for future services.

Applying the recognition principles may result in recognition of assets or liabilities that the seller had not recognised in its FINANCIAL STATEMENTS. The application of the recognition and measurement concepts in IFRS 3 for intangible assets and other acquired liabilities is discussed below. The recognition and measurement of tangible invested assets, such as assets arising from ceded reinsurance invested assets, is not in the scope of this IAN. It is worth noting that there are some exceptions to the use of fair value measurement; for example, liabilities from retirement benefit plans are measured according to IFRS guidance for pension liabilities.

What are some examples of intangible assets arising from a business combination involving contracts in the scope of IFRS 17 and what are the accounting requirements?

Several potential intangible assets could arise from a business combination involving contracts issued by insurers. These include, but are not limited to:

- renewal periods for short-duration contracts
- distribution systems or relationships
- customer relationships
- service agreements
- brand names, trademarks, and copyrights
- proprietary software or technology
- licenses to transact insurance business
- product approvals and registrations
- value of liability guarantee

The following paragraphs provide descriptions of some of the more common intangible assets identified in combinations of insurance entities and some related considerations. The first step is, as already noted, to determine if the intangible asset can be recognized. If so, the entity determines the asset’s fair value and the appropriate technique for the amortization of the asset. Full development of common valuation and amortisation methods is beyond the scope of this IAN. While specific possible amortisation approaches are described for these assets, it should be kept in mind that IAS 38 provides that the amortisation period used should reflect the pattern in which an asset’s future economic benefits are expected to be consumed by the entity. If that pattern cannot be determined reliably, the straight-line method could be used. There is also the possibility that some intangible assets have indefinite lives, and hence the intangible asset would not be amortised, but rather tested for recoverability, referred to as testing for impairment. The actuary may wish to consult with accountants and other professionals, such as valuation experts, for assistance in determining which other potential intangible assets should be recognised, and how they should be measured and amortised and tested for impairment.

Value of renewal periods for short-duration contracts (sometimes also referred to as “customer lists” for short-duration contracts)

A common situation in non-life insurance is the establishment of an intangible asset related to the value of potential renewals of short-duration contracts. The fair value may be based on market pricing benchmarks if such transactions and related benchmarks are reasonably well established for the market in which the acquired business resides. Such benchmarks in at least some markets are based on a percentage of the premiums in-force or a percentage of annual premium writings. Absent such benchmarks, the fair value may be based on the expected future distributable earnings from renewal contracts, usually net of the cost of capital, discounted at a market discount rate commensurate with the risk of the cash flows. Among the methods for amortisation that have been used are:

1. in relation to expected distributable earnings used to derive the fair value estimate; and
2. based on expected premiums from future renewals.

Value of distribution systems/relationships

The value associated with a distribution system may be significant, especially for distribution arrangements involving contingent commissions, business processing or purchases of third-party intermediaries. Fair values of such systems can be derived from cash flow models and from valuation specialists. Two of the possible amortisation methods that have been used for future business are 1) in relation to expected distributable earnings, and 2) proportional to new business premiums.
Customer relationships and customer list – long duration contracts

Selling unrelated contracts to existing customers may provide the basis for an intangible asset or it may be included in goodwill, depending on the facts and circumstances. Care should be taken not to double count the value the asset related to a customer relationship and the value of a distribution system, if the considerations relate to the same future contracts and cash flows.

Service agreements

When a seller has entered into third-party contracts for certain services like claims administration, the acquirer considers whether an intangible asset might exist. There may be an intangible asset for the service component of investment or insurance contracts when this component is separated for recognition and measurement. Due consideration is given to whether the terms of such agreements are at, below or above current market rates. The intangible asset, if any, may relate to the amount in fees that represent an above-market margin.

Amortisation methods used for such intangibles include:

1. in relation to the net revenue (fees charged less costs to provide the service) earned for providing the service; and
2. on a straight-line basis over the contract period.

Brand names, trademarks, copyrights

The entity being acquired may have a legal right to certain items such as identifying names, slogans and logos that would qualify for separate recognition as intangible assets. Identifying the additional cash flows associated with such items may prove difficult. Amortisation would likely be based on the projected cash flows used to estimate the fair value. However, some legal rights may be renewable indefinitely leading to the conclusion that the intangible should not be amortised.

Proprietary software or technology

Some insurers have developed expert systems that can be separately recognised as having value. Such systems can include underwriting, distribution/cross selling, and investment management. Amortisation of such systems-related intangible assets may be a straight line over an assumed lifetime of the system.

Licenses to transact insurance business

IAS 38.88 requires entities to assess whether intangible assets have either a finite useful life or indefinite useful life. Licenses might be viewed as having an indefinite useful life, such that their value is not amortised over time (although they may be subject to an impairment test.). Their value might be derivable from market transactions for shell entities or from brokers in that market.

Product approvals or registrations
Product forms that have been approved for issue in certain jurisdictions can be determined to be intangible assets. The value could be viewed as the alternative cost to develop the same product and go through the approval process. Alternatively, the value could be viewed as something more if the product is in a niche market with limited access. Amortisation of the value could be based on the anticipated revenues expected from the sales of the new product.

**Value of Liability Guarantees**

Business combinations sometimes include guarantees regarding the claims liability run out, such as a guarantee to reimburse the acquirer for losses above a certain amount. The actuary will need to consider when such a guarantee is an identifiable asset that should be recognized at its fair value. When the guarantee is treated as a reinsurance asset and measured according to the entity’s current accounting policies the difference between the recorded asset and the fair value of the guarantee is reported as an intangible asset or liability. This treatment is consistent with the accounting for indemnification assets, as given in IFRS 3.28 and 3.57.

How does the entity account for goodwill or for a gain from a bargain purchase?

IFRS 3 requires recognition of goodwill as of the acquisition date. Goodwill is the excess of the consideration transferred over the net of the identifiable assets and liabilities acquired. Identifiable assets here include those intangible assets which have been recognized in connection with the acquisition. Goodwill implicitly includes intangible assets that do not satisfy the criteria for recognition. (IFRS 3.32)

Because consideration may include not only cash, but equities, future consideration or other types of compensation, the determination of the value of consideration can become complex. IFRS 3 provides some guidance on determining the value of consideration transferred. Of particular note is the fact that transaction costs, such as legal, advisory or accounting fees associated with the transaction are not part of the consideration.

Goodwill represents a payment made by the acquirer in anticipation of future economic benefits from assets that are not capable of being individually identified, recognised or reliably measured individually. The value of goodwill need not be justified, but is subject to tests of impairment. Goodwill is not amortised. Goodwill is to be measured subsequently at the amount recognised at the acquisition date less any accumulated impairment losses. The goodwill carrying amount must be tested for impairment in accordance with the requirements of IAS 36, Impairment of Assets (IFRS 3. B63).

The excess of the consideration transferred over the net of the identifiable assets and liabilities acquired may be negative. In this case, the acquirer reassesses the fair value of acquired assets and liabilities to be sure that all acquired assets and assumed liabilities have been identified, recognised and measured properly. If, after making adjustments for the reassessment, the excess remains negative, a bargain purchase is said to have occurred. There is no goodwill. The gain on the business combination is recognised in the acquirer’s profit and loss in the period in which the acquisition takes place (IFRS 3.33 – 3.36).

Can there be a deferred tax asset or liability as a result of a business combination or other transfer?
The guidance for deferred taxes is found in IAS 12 Income Taxes. The fair value of acquired assets and liabilities assumed in a business transaction may be different from the tax value of the respective assets or liabilities. Temporary differences arise from the business combination when the tax bases of the identifiable assets acquired and liabilities assumed are not affected by the business combination or are affected differently. For example, the initial value of insurance contracts acquired in a business combination is fair value, but the tax basis of the contracts may remain at the basis that it had to the seller. This difference is generally a taxable temporary difference which gives rise to a deferred tax asset or liability. (IAS 12.19) The deferred tax asset or liability is the amount of the difference multiplied by the tax rate that is expected to apply when the difference reverses. Hence the calculation may require a projection of the reversal of the difference, if it is necessary to reflect varying tax rates. There is however no discounting in the calculation of a deferred tax asset or liability.

The resulting deferred tax asset or liability affects goodwill (IAS 12.66). When a deferred tax asset or liability is recognized as a result of a difference between the fair value of an item and its tax value in a business combination, this difference is considered in the determination of the goodwill or the amount of the bargain purchase gain.

Note that the recognition of a deferred tax asset depends on the entity being able to assert that the asset is recoverable. A deferred tax asset is generally recognised for deductible temporary differences to the extent that it is probable that taxable profit will be available against which the deductible temporary difference can be utilized. The carrying amount of a deferred tax asset is reviewed at the end of each reporting period. The entity reduces the carrying amount of a deferred tax asset to the extent that it is no longer probable that sufficient taxable profit will be available to allow the benefit of part or all of that deferred tax asset to be utilized. Any such reduction can be reversed to the extent that it subsequently becomes probable that sufficient taxable profit will be available for the asset to be utilized.

What are the disclosure requirements related to business combinations?

Disclosure guidance for business combinations is found in IFRS 3, B64-B67. The disclosures include both qualitative and quantitative notes that “enable users of [the entity’s] financial statements to evaluate the nature and financial effects of the business combination”. The disclosures do not supplant disclosures required by IFRS 17. It may be necessary to make some of the disclosures for the acquired business separately. Although not explicitly stated in IFRS 17 or in IFRS 3, these disclosures may apply to transfers as well.
Chapter 12 – Transition

Before consulting this chapter, be sure to read the Introduction to this IAN, particularly the sections on References to IFRS 17, Materiality and Proportionality.

12.A. What does this chapter address?

This Chapter considers the one-time event of presenting statements applying IFRS 17 for the first time. It has four sections: an overview and then a section for each of the three transition approaches described in IFRS 17 – the retrospective approach of IAS 8 and the alternative approaches introduced by IFRS 17, modified retrospective and fair value. The Chapter has a sample timeline. It also references content from Chapter 10 on Fair Value Measurement.

12.B. Which sections of IFRS 17 address this topic?

Appendix C of IFRS 17 provides guidance on this topic.

12.C. What other IAA documents are relevant to this topic?

None.
Overview

12.1. Where does the IASB describe the requirements for transition of the in-force insurance contracts from current accounting standards to IFRS 17?

The effective date, requirements and approaches are described in Appendix C of IFRS 17 and the accompanying Basis for Conclusions.

The transition requirements apply when an entity first applies IFRS 17.

12.2. What is the effective date of IFRS 17?

IFRS 17 applies to annual reporting periods beginning on or after 1 January 2021, with early application permitted. The start of the annual reporting period in which an entity first applies IFRS 17 is called the date of initial application. Some jurisdictions may adopt other effective dates.

12.3. What IFRS 17 comparative information is required?

There is a requirement to provide IFRS 17 financial statements (comparatives) as of the beginning of the period immediately preceding the date of initial application.

The dates that follow apply for entities with quarterly financial reporting and an assumed date of initial application of 1 January 2022. Analogous dates would apply in other situations.

On 31 March 2022 the entity will report the following on the new IFRS 17 basis:

- the 31 December 2020 statement of financial position
- the statement(s) of financial performance for the 3-month period ending 31 March 2021
- the 31 March 2021 statement of financial position will not be presented, but will be necessary to the extent needed to prepare the 31 March 2021 statement(s) of financial performance
- the 31 December 2021 statement of financial position
- the statement(s) of financial performance for the 3-month period ending 31 March 2021
- the 31 March 2021 statement of financial position

Further, on 31 March 2021, the entity will disclose the impact of the change in accounting standards. This disclosure will be as of 31 December 2020.

12.4. Can more than one year of IFRS 17 comparative information be presented?

Yes, an entity is permitted to present more than one year of IFRS 17 comparative information (paragraphs C25-C28). The beginning of the earliest adjusted comparative period presented (which would be the beginning of the period immediately preceding the
date of initial application when only one year of comparative information is presented) is called the “transition date”. In the example shown in question 6.3, the transition date would be December 31, 2020 (January 1, 2021). If an entity chooses to present two years of comparative information (both of which are based on IFRS 17), the transition date would be December 31, 2019 (January 1, 20120). See paragraphs C2 and C25.

12.5. If provided, how is comparative information for earlier periods presented?

If the comparative information and disclosures for earlier periods are adjusted by applying IFRS 17, Question 12.3 above applies. If the comparative information and disclosures for earlier periods are unadjusted, paragraph C27 requires the entity to “clearly identify the information that has not been adjusted, state that it has been prepared on a different basis, and explain that basis.”

12.6. If the implementation of IFRS 9 is deferred until 1 January 2021, what is the interaction with the IFRS 17 comparative financial statements?

IFRS 9 does not require comparative financial statements. However, the implementation of IFRS 9 (e.g., the designation of assets) might be different under IFRS 17 than under the current financial reporting standards. If so, the IFRS 17 comparative financial statements would be presented assuming the implementation of IFRS 9 that is consistent with IFRS 17. Assuming the above timeline with one year of comparatives, the re-designation of assets under IFRS 9 would be as of 31 December 2020 for the purposes of IFRS17 comparatives only.

12.7. If IFRS 9 is implemented before IFRS 17, are financial assets re-designed when IFRS 17 is implemented?

The guidance for re-designation and related disclosures is in paragraphs C29-C33. If there are assets designated as fair value through profit or loss to avoid an accounting mismatch, that designation must be revoked if the accounting mismatch no longer exists under IFRS 17. Otherwise, re-designation of assets is permitted but not required.

As described in question 12.6 above, the IFRS 17 comparative financial statements would be presented assuming the implementation of IFRS 9 that will be adopted with IFRS 17.

12.8. What time period does the transition guidance cover?

The transition guidance applies to all insurance contracts in force at the transition date, which is 31 December 2020 in the above timeline. All insurance contracts issued after that date would be subject to IFRS 17.

12.9. In addition to IFRS 17, what other guidance applies to transition?

Implementing IFRS 17 is considered a change in accounting policy, so IAS 8 Accounting Policies, Changes in Accounting Estimates and Changes in Accounting Policies applies, except, per paragraph C3, the entity need not disclose the quantitative information required by paragraph 28(f) of IAS 8.

12.10. What is the impact on previous business combination balances of paragraph C4(b) of IFRS17?
Paragraph C4(b) requires the entity to derecognise all balances related to business combinations that would not have existed had IFRS 17 been in effect at the time of the business combination. For example, Value of Business Acquired (VOBA) balances will be derecognised, but goodwill balances will be unchanged at the transition date.

12.11. What is to be measured or determined at transition?

At the transition date, the following is required for each group of contracts:

- the carrying value of the liability (or asset), with separate measurement of the risk adjustment and the CSM or loss component,
- the “locked-in discount rate”, being the discount rate used for CSM accretion,
- the accumulated OCI (if the OCI option is elected), and
- the balance of unamortised insurance acquisition cash flows (unless the fair value approach is used).

12.12. How should these items be measured or determined?

Appendix C describes three approaches for transition: full retrospective, modified retrospective and fair value.

The measurement of fulfilment cash flows at the transition date is a straightforward application of paragraphs 33-37. However, the CSM or loss component, the locked-in discount rate and the accumulated OCI all require information from the date of initial recognition, which may be many years before the date of transition. These items are therefore the focus of the transition guidance.

The following questions of this Chapter describe the identification of groups of contracts, the determination of the locked-in discount rate, the measurement of accumulated OCI, and the measurement of the CSM or loss component under the three approaches (full retrospective, modified retrospective, fair value).

12.13. How does the entity decide which approach to use for each group of contracts? As set out in paragraph C5, the full retrospective approach must be used unless it is impracticable to do so, in which case the entity must choose between the modified retrospective approach and the fair value approach. However, if reasonable and supportable information necessary to apply the modified retrospective approach is not available, the fair value approach must be used.

12.14. How does the entity identify groups of contracts at transition?

Paragraphs 14-24 describe the criteria for identifying groups of contracts. Under the full retrospective approach, identification of groups requires the assessment of these criteria as at the date of initial recognition of the contracts in each group. If this information is not available, the full retrospective approach would not be used. Identification of groups under the modified retrospective approach and the fair value approach are described in later questions of this Chapter.

12.15. What other information is needed to use the full retrospective approach?
See questions 12.24 to 12.32. If any material information is not available, the full retrospective approach would not be used.

12.16. Would multiple approaches be used on a single group of contracts?

For a group of contracts, only one approach would be applied.

12.17. What does impracticable mean?

IAS 8 states:

“Applying a requirement is impracticable when the entity cannot apply it after **making every reasonable effort** to do so. 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:

(a) the effects of the retrospective application or retrospective restatement are not determinable;

(b) the retrospective application or retrospective restatement **requires assumptions about what management’s intent would have been in that period**; or

(c) the retrospective application or retrospective restatement **requires significant estimates of amounts and it is impossible to distinguish objectively information** about those estimates that:

I. provides evidence of circumstances that existed on the date(s) as at which those amounts are to be recognised, measured or disclosed; and

II. would have been available when the financial statements for that prior period were authorised for issue from other information.”

Effectively, this means that the entity must demonstrate that although it has made every reasonable effort to gather the necessary information to enable it to determine the required elements retrospectively, that information is not available, or not available in a form that would enable it to be used without undue cost and effort. Information might be unavailable for a variety of reasons including:

- the information is no longer in the entity’s possession;
- the information is available but outside the entity’s normal retention policy and so might not be complete;
- the entity has the information but is unusable because of technological constraints;
- the need to determine what decisions management might have taken in the past (e.g., declaration of bonus rates);
- the information requires hindsight to understand management’s intent or the entity’s view.
Paragraph BC378 gives examples of items needed for retrospective application for which measurement would often be impracticable.

12.18. Are separate disclosures required for groups using different approaches?
Yes. Paragraphs 114-116 describe the required disclosures.

12.19. After transition, can new contracts be added to the groups established at transition?
The disclosure requirements of paragraphs 114-116 would prohibit new contracts being added to groups measured at transition using the modified retrospective approach or the fair value approach.

12.20. What is different for groups of insurance contracts with (vs. without) direct participation features?
The locked-in discount rate is not needed for CSM accretion or future CSM adjustments and so is only required if the OCI option is elected.

12.21. What is different for groups of contracts measured using the premium allocation approach?
For the liability for remaining coverage, there is no risk adjustment or CSM or loss component to be determined at transition. Also, the locked-in discount rate is not needed.

12.22. What is different for incurred claims liabilities?
There is no CSM or loss component to be determined at transition. The locked-in discount rate is not needed for CSM accretion or future CSM adjustments and so is only required if the OCI option is elected.

12.23. What is different for groups of reinsurance contracts?
There is never a loss component for groups of reinsurance contracts. This is true even if (per paragraph 66(c)(ii)) losses are recognised in profit and loss (rather than adjusting the CSM) to mirror the treatment applying to a group of underlying direct contracts.

The Full Retrospective Approach

12.24. Are simplifications and approximations permitted when applying the full retrospective approach?
The full retrospective approach involves looking back to the date of initial recognition and determining the liability (and in particular, the CSM or loss component) on that date as if IFRS 17 had been in effect. Then, to determine the CSM or loss component at the transition date, the CSM or loss component at the date of initial recognition would be adjusted through time as described in paragraphs 43-45 (CSM) and 50-52 (loss component).

Simplifications and approximations are permitted if they do not have a material impact on the results. If any material information is not available, the full retrospective approach would not be used.
12.25. How are groups of contracts identified?

Paragraphs 14-24 describe the criteria for identifying groups of contracts. Under the full retrospective approach, identification of groups requires the assessment of these criteria as at the date of initial recognition of the contracts in each group.

12.26. How is the locked-in discount rate determined?

The locked-in discount rate is the discount rate that would have been established at the date of initial recognition as described in paragraph 36.

12.27. How is the liability (and in particular, the CSM or loss component) determined at the date of initial recognition?

Actual policy data for the contracts in the group would be used. Information (e.g., assumptions, pre-coverage acquisition expenses) required to estimate future cash flows, the risk adjustment and the CSM or loss component would, to the extent possible, be consistent with the information that would have been available at the date of initial recognition, without the use of hindsight.

In particular, the risk adjustment at the date of initial recognition should reflect the assessment of risk from the perspective of the entity as at the date of initial recognition. As noted in question 12.26 above, the discount rate would be the discount rate that would have been established at the date of initial recognition as described in paragraph 36.

12.28. How is the CSM or loss component measured at the transition date?

The CSM or loss component at the transition date would be measured by taking the CSM or loss component at the date of initial recognition (determined as in question 12.27 above) and adjusting through time as described in paragraphs 43-45 (CSM) and 50-52 (loss component) of IFRS 17.

12.29. Should contracts that are not in-force at the transition date, but which at the date of initial recognition would have been included in the group of contracts as determined in question 12.25 above, be included in the retrospective calculation?

Yes. All contracts that were in the group at the date of initial recognition would contribute to the determination of the liability at the date of initial recognition. Furthermore, cash flows and coverage units associated with these contracts would contribute to the adjusting through time of the CSM or loss component described in question 12.28 above.

12.30. What pattern should be used for CSM amortisation between the date of initial recognition and the transition date?

The adjustments made to the CSM or loss component would, to the extent possible, be consistent with the information that would have been available at the date each adjustment would have been made, without the use of hindsight. However, per paragraph C3(b), for groups of contracts with direct participation features, the option described in paragraph
B115 (to reflect the economic offset of derivatives in profit and loss rather than the CSM) would not be applied.

The adjustments to the CSM or loss component would be made as at each reporting date between the date of initial application and the transition date. If the resulting CSM or loss component would be materially similar, adjustments could be made less frequently, (e.g., annually).

12.31. If the OCI option is elected, how is the accumulated OCI at the transition date measured?

For groups of 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 accumulated OCI at transition is the difference between the fulfilment cash flows measured using the locked-in discount rate and the fulfilment cash flows measured using the discount rate in effect at the transition date.

For groups of contracts for which changes in assumptions that relate to financial risk have a substantial effect on the amounts paid to the policyholder but which are not insurance contracts with direct participating features where the entity holds the underlying items (i.e., when paragraph 88 applies), the systematic allocation that would have been adopted at the date of initial recognition (per paragraph B132) would be determined and applied retrospectively to measure the accumulated OCI at transition.

For groups of contracts applying the premium allocation approach, the accumulated OCI at transition for the liability for incurred claims is the difference between the fulfilment cash flows measured using the discount rate in effect at the date the claim was incurred and the fulfilment cash flows measured using the discount rate in effect at the transition date.

For groups of contracts with direct participation features where the entity holds the underlying items (i.e., when paragraph 89 applies), the accumulated OCI at transition would be measured retrospectively applying paragraphs B134-B136.

12.32. How is the balance of unamortised insurance acquisition cash flows determined?

The balance of unamortised insurance acquisition cash flows would be determined by taking the insurance acquisition cash flows allocated to the group for the purpose of calculating the CSM or loss component at the date of initial recognition and removing the portion that would have been amortised under paragraph B125.

The Modified Retrospective Approach

12.33. When can the modified retrospective approach be used?

When it is impracticable to apply the full retrospective approach to a group of contracts, the entity must choose to use either the modified retrospective approach or the fair value approach. However, the entity may only choose the modified retrospective approach if it can obtain reasonable and supportable information necessary to do so. If not, as per the requirements of IFRS 17, the fair value approach must be used.
12.34. What is the modified retrospective approach trying to achieve?

The objective of the modified retrospective approach is to achieve the closest outcome to
the full retrospective approach possible.

12.35. How does the entity achieve this objective?

The entity would maximise the use of information that would have been used to apply the
full retrospective approach, though only to the extent that information is reasonable and
supportable and available without undue cost or effort.

Appendix C describes specific modifications, each of which is permitted only to the extent
that the entity does not have reasonable and supportable information to apply the full
retrospective approach (per paragraph C8). The assessment of which modifications are
permitted would be made for each modification for each group of contracts.

For the remainder of this section, “available information” should be read as “reasonable and
supportable information that is available without undue cost or effort”.

12.36. How are groups of contracts identified under the modified retrospective approach?

If the information is available, groups of contracts would be identified applying paragraphs
14-24.

Paragraph 14 requires the identification of portfolios of insurance contracts, where a
portfolio comprises contracts that are subject to similar risks and managed together. To
the extent information is not available, one of the permitted modifications of the modified
retrospective approach allows the entity to identify portfolios of contracts based on how its
business is managed at transition.

Furthermore, insurance contracts with direct participation features would be in different
portfolios than contracts without direct participation features. At the time of transition,
information from the date of initial recognition about whether contracts would have met the
definition of insurance contracts with direct participation features when they were issued
may not be available. In this case, one of the permitted modifications of the modified
retrospective approach allows the entity to use information available at transition to
determine whether a contract meets the definition of an insurance contract with direct
participation features, i.e., contracts would be included in a portfolio of insurance contracts
with direct participation features if they meet the definition of insurance contracts with
direct participation features at the date of transition.

Paragraphs 15-21 indicate that portfolios are split into three (or more if desired) groups
based on the profitability of contracts at initial recognition. At the time of transition,
information from the date of initial recognition about the profitability of contracts issued in
past years may not be available. In this case, one of the permitted modifications of the
modified retrospective approach allows the entity to use information available at transition
to assess the profitability of contracts for the purpose of grouping. That is, information
about the profitability of contracts currently being issued can be applied to similar contracts
issued in past years. However, such information must be reasonable and supportable,
otherwise the fair value approach would be used. The longer it has been since the policy
has been issued may be a consideration in determining if the information at transition is reasonable and supportable.

Paragraph 22 requires the groups determined per paragraphs 14-21 to be further divided so that contracts issued more than one year apart are not included in the same group. Paragraph C10 permits a modification of this requirement when information is not available. This modification allows the entity to group contracts issued more than one year apart to allow the application of the modified retrospective approach whenever reasonable and supportable information necessary to do so is available. For example, if reasonable and supportable information is only available for contracts issued within 5 years of the transition date and the entity wishes to use the modified retrospective approach for such contracts, the entity could establish two groups of contracts, viz., those issued within 5 years of the transition date (for which the modified retrospective approach would be applied) and those issued more than 5 years before the transition date (for which the fair value approach would be applied).

12.37. How is the locked-in discount rate determined under the modified retrospective approach?

If contracts issued more than one year apart are included in the same group (i.e., the modification in paragraph C10 is made), the entity is permitted to determine the locked-in discount rate using the discount rate in effect at the date of transition rather than the discount rate in effect at the date of initial recognition.

Otherwise, if available, the locked-in discount rate is the discount rate that would have been established at the date of initial recognition as described in paragraph 36.

If not available, one of the permitted modifications of the modified retrospective approach allows the entity to use the relationship between an observable yield curve and the current discount rate to estimate the discount rate as at the date of initial recognition as follows:

If there is an observable yield curve that approximates the current discount rate for at least three years before the transition date, that observable yield curve at the date of initial recognition would be used to determine the locked-in discount rate.

If such an observable yield curve does not exist, but there is an observable yield curve with a reasonably consistent spread to the current discount rate, the average spread between that observable yield curve and the current discount rate would be applied to that observable yield curve at the date of initial recognition to determine the locked-in discount rate. The average spread should be an average over at least three years before the transition date (paragraph C13b)

12.38. How is the CSM or loss component at the transition date measured under the modified retrospective approach?

The full retrospective approach would be used to the extent information is available. The following modifications are permitted to the extent information is not available:

*Insurance contracts without direct participation features*
Discretionary cash flows - The entity would use information at the transition date (rather than the date of initial recognition) to determine how to identify discretionary cash flows for the purpose of applying paragraphs B94-B96. That is, the entity would use policies on discretionary payments that apply at the date of transition if the policies on discretionary payments that applied at the time of initial recognition are not available.

Future cash flows – The future cash flows at the date of initial recognition would be estimated as the future cash flows at the transition date (or an earlier date if the information is available) adjusted by the cash flows that are known to have occurred between the initial recognition and the transition date (or earlier date). Such known cash flows would include cash flows related to all contracts that would have been in the group at the date of initial recognition, including contracts that are no longer in force at the transition date.

Risk adjustment – The risk adjustment at the date of initial recognition would be estimated as the risk adjustment at the transition date adjusted by the expected release of risk before that date. The expected release of risk would be based on the release of risk for similar contracts the entity is issuing at the transition date (paragraph C14).

CSM amortisation – The entity would estimate the amount of CSM recognised in profit or loss because of the transfer of services (paragraph 44(e) between the date of initial recognition and the transition date by comparing the remaining coverage units (for contracts still in-force at the transition date) with the coverage units provided under the group of contracts before the transition date.

Loss component – If there is a loss component at initial recognition, the entity would estimate the amount allocated to the loss component before the transition date using a systematic allocation consistent with the modifications adopted above.

**Insurance contracts with direct participation features**

The entity would measure the CSM at the transition date as the total fair value of the underlying items at the transition date minus:

- the fulfilment cash flows at the transition date, adjusted as described in paragraph C17(c), and
- (if CSM), minus the amount of CSM that relates to service provided before the transition date, estimated by comparing the remaining coverage units with the coverage units provided under the group of contracts before the transition,
- (if loss component), adjust the loss component to nil and increase the liability for remaining covering by the same amount.

If information is not available to apply a permitted modification, the fair value approach must be used.

12.39. If the OCI option is elected, how is the accumulated OCI at the transition date measured under the modified retrospective approach?
For contracts with direct participation features where the entity holds the underlying items (i.e., when paragraph B134 applies), the accumulated OCI at transition would be the accumulated OCI on the underlying items.

Otherwise, the accumulated OCI at transition would be:

- the difference between the fulfilment cash flows measured using the locked-in discount rate and the fulfilment cash flows measured using the discount rate in effect at the date of transition, for 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

- nil for contracts for which changes in assumptions that relate to financial risk have a substantial effect on the amounts paid to the policyholder.

Furthermore, if contracts issued more than one year apart are included in the same group (i.e., the modification in paragraph C10 is made), the entity is permitted to determine the accumulated OCI as nil.

Note that the accumulated OCI would be nil whenever (per the first paragraph of question 12.36 above) the entity chooses to determine the locked-in discount rate as the discount rate in effect at the date of transition.

12.40. How is the balance of unamortised insurance acquisition cash flows determined under the modified retrospective approach?

The modification related to future cash flows in question 12.37 above can be used if the information required to determine the balance of unamortised insurance acquisition cash flows retrospectively (see question 12.31) is not available.

The Fair Value Approach

12.41. What is the fair value used for?

The CSM or loss component at transition is determined as the fair value of a group of contracts at the transition date minus the fulfilment cash flows of the group as at the transition date.

12.42. How are groups of contracts identified under the fair value approach?

Per paragraphs C21-C22, the entity may choose to use the information available at transition rather than the information as at initial recognition to identify groups of contracts. This includes identifying portfolios of insurance contracts (see question 12.35 above).

Furthermore, per paragraph C23, the entity may choose not to apply paragraph 22 and thereby include contracts issued more than one year apart in a group.

Therefore, when applying the fair value approach at transition, the entity may identify portfolios of contracts based on how it manages the business at transition and determine there are three groups per portfolio (onerous, no significant risk of becoming onerous, other), with no division of those groups by year of issue.
12.43. How is the locked-in discount rate determined under the fair value approach?

Per paragraph C23, the entity may choose to determine the locked-in discount rate as the
discount rate in effect at the date of transition.

Note that the same locked-in discount rate would apply to groups within the same portfolio.

12.44. How is the fair value of a group of contracts as at the transition date measured?

The fair value of a group of contracts is analogous to the consideration received/paid on
portfolio transfer or business combination. It is the amount the entity would have to pay a
third party to take on the obligations and risks of the group.

IFRS 13 Fair Value Measurement provides guidance on measuring fair value. See Chapter
10 for guidance on the application of IFRS 13 to insurance contracts on transition to IFRS
17.

The fair value at the date of transition would use observable market information,
assumptions, economic information, views on the cost of risk etc. as at the date of
transition.

12.45. How are the fulfilment cash flows of the group as at the transition date measured?

The measurement of fulfilment cash flows at the transition date is described in paragraphs
33-37.

12.46. If the OCI option is elected, how is the accumulated OCI at the transition date measured
under the fair value approach?

For contracts with direct participation features where the entity holds the underlying items
(i.e., when paragraph B134 applies), the accumulated OCI at transition would be the
accumulated OCI on the underlying items.

Otherwise, the entity can choose to set the accumulated OCI to nil, or to measure the
accumulated OCI retrospectively if the information is available.

12.47. Is balance of unamortised insurance acquisition cash flows required under the fair
value approach?

No.
Section D – Other IFRS 17 Topics

This section includes three chapters that cover topics that do not logically fall within any of the other sections. These are:

- Embedded Derivatives – Chapter 13
- Contract Modifications and Derecognition - Chapter 14
- Measurement, Presentation and Disclosure – Chapter 15

Chapter 13 discusses the issues which may arise in detecting and identifying embedded derivatives in such contracts which may need to be separated. This Chapter only considers the requirements under IFRS 17 for the separation of certain derivatives embedded in contracts subject to the scope of IFRS 17. Further information about embedded derivatives based on other IFRSs is found in IAN 10 Embedded Derivatives.

Chapter 14 discusses what is and is not considered to be a contract modification and how to account for them. The chapter also discusses the circumstances under which a contract is derecognised whether due to a contract modification or otherwise.

Chapter 15 discusses the measurement, presentation and disclosures resulting from IFRS 17. In many instances these are significantly different from those of most existing accounting regimes used for insurance contracts and companies. This chapter also considers changes in presentation permitted or required when using the PAA. Any changes permitted when using the VFA are discussed in chapter 8.
Chapter 13 – Embedded Derivatives

Before consulting this chapter, be sure to read the Introduction to this IAN, particularly the sections on References to IFRS 17, Materiality and Proportionality

13.A. What does this chapter address?

This Chapter considers the requirements under IFRS 17 for the separation of certain derivatives embedded in contracts subject to the scope of IFRS 17. This Chapter discusses the issues which may arise in detecting and identifying embedded derivatives in such contracts which may need to be separated. Further information about embedded derivatives based on other IFRSs is found in the existing IAN 10 Embedded Derivatives.

13.B. Which sections of IFRS 17 address this topic?

Paragraphs 11c and B10 provide guidance on this topic.

13.C. What other IAA documents are relevant to this topic?

None
13.1. What is a derivative and an embedded derivative?

Derivatives and embedded derivatives are defined in IFRS 9 in paragraph 4.3.1. As in IAS 39, IFRS 9 differentiates between derivatives and embedded derivatives and accordingly references to “derivatives embedded in the contract” (as in paragraphs 54 (a) and 70 (a) of IFRS17 relating to the premium allocation approach) might be seen to refer to the definition of a derivative rather than to that of an embedded derivative.

Paragraph 4.3.3 of IFRS 9 includes conditions for separating an embedded derivative, which are applicable according to paragraph 11 (a) of IFRS 17 to insurance contracts and other contracts in the scope of IFRS 17. The guidance regarding definition of derivatives and embedded derivatives and the conditions for separation of those has not changed from those in IAS 39 and accordingly the contents of IAN 10 Embedded Derivatives referring to IAS 39 remains valid. This also applies to other aspects of accounting for embedded derivatives that are to be separated.

13.2. What are the IFRS 17 requirements on the accounting for derivatives embedded in the contract and embedded derivatives?

The requirements in IFRS 17 on the accounting for derivatives embedded in the contract and embedded derivatives are limited (see paragraph 11(a) as noted above).

IFRS 9 defines a derivative as a “financial instrument or other contract within the scope of” and IFRS 9 as “with all three of the following characteristics:

a. Its value changes in response to the 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 a party to the contract (sometimes called the ‘underlying’).

b. It requires no initial net investment or an initial net investment that is smaller than would be required for other types of contracts that would be expected to have a similar response to changes in market factors.

c. It is settled at a future date.”

On the conditions for separating an embedded derivative in paragraph 4.3.3 of IFRS 9:

- Paragraph 4.3.3 (b) (meeting stand-alone the definition of a derivative) might be seen as not met if the embedded derivative would be considered stand alone under IFRS 17 (see paragraphs B10 of IFRS 17 and 2.1 (e) of IFRS 9).

- Paragraph 4.3.3 (c) (fair value measurement of the entire contract) for separation might be seen to be met generally by contracts in the scope of IFRS 17 since the condition might be seen to refer explicitly to the measurement of the entire contract.
Paragraph B.4.3.1 of IFRS 9 notes that paragraph 4.3.3 of IFRS 9 “requires the entity to identify any embedded derivative, assess whether it is required to be separated from the host contract and, for those that are required to be separated, measure the derivatives at fair value at initial recognition and subsequently at fair value through profit or loss.”

Embedded derivatives that are not required to be separated (under IFRS 9) are considered as part of the insurance contract and accounted for under IFRS 17.

13.3. Are the IFRS 17 requirements on embedded derivatives different from those in IFRS 4?

The requirements may be different.

Paragraph 8 of IFRS 4 stated that, as “an exception to the requirements in IAS 39, an insurer need not 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 differs from the carrying amount of the host insurance liability.” This exception is not included in IFRS 17. This might be seen as a requirement to separate embedded derivatives of that kind, if they meet the conditions in paragraph 4.3.3. of IFRS 9.

In addition, the IFRS 4 implementation guidance (IG3 and 4) provided 20 examples of products, some with and some without embedded derivatives requiring separation. The IFRS 4 implementation guidance has not been included in the implementation guidance to IFRS 17. As a consequence, there may be a difference in the scope of embedded derivatives requiring separation. This might require an assessment based on the nature of individual contract types.

Experience of applying IFRS 4 showed that in many countries the majority of insurance products do not contain embedded derivatives which require separation. It is unclear yet whether the mentioned changes might have a different result.

13.4. Are there specific disclosure requirements for embedded derivatives?

For embedded derivatives that are not separated and so are part of an insurance contract, there are no additional specific disclosure requirements in IFRS 17. For reference in IFRS 4, paragraph 39(e) specifically required that information about the exposure to market risk be disclosed if such embedded derivatives are not measured and presented at fair value through profit or loss.

For embedded derivatives that are separated, the disclosure requirements are as set out in IFRS 17.
Chapter 14 Contract Modifications and Derecognition

Before consulting this chapter, be sure to read the Introduction to this IAN, particularly the sections on References to IFRS 17, Materiality and Proportionality

14.A. What does this chapter address?

This chapter considers the treatment under IFRS 17 of contract modification to insurance contracts, including reinsurance contracts, and de-recognition including on transfer to third parties.

It discusses what is a contract modification and which of these:

- result in the derecognition of the original contract and recognition of the modified contract as a new contract for a deemed premium; or
- can simply be treated as a change in estimates.

The chapter also describes:

- a possible approach for determining the deemed premium when the modification is treated as a cancellation and replacement of the original contract; and
- as well as their application under the premium allocation approach.

14.B. Which sections of IFRS 17 address this topic?

Paragraphs 72 to 77 provide guidance on this topic.

BC 306 and 316-322 also provide background on the subject.

14.C. What other IAA documents are relevant to this topic?

None
Overview

This flowchart is included to help in understanding whether or not there is a contract modification which needs to be accounted for. It is designed to be used in conjunction with the questions in this chapter.

What is a contract modification?

14.1. What is a contract?

Refer to Chapter 1 “Classification of Contracts and Contract Boundaries”.

14.2. How does IFRS 17 define a Contract Modification?

IFRS 17 defines a contract modification as a change to the legally enforceable terms of the contract, for example, either by agreement between the parties to the contract or by change in law or regulation (see paragraph 72). Note that the exercise of any rights or options available under the contract, by one or both parties, are not contract modifications (see paragraph 72) and form part of the expected cash flows of original contract.

14.3. What is a contract modification?
Examples of what is and is not a contract modification for IFRS 17 purposes are given below. These examples are not a complete or exhaustive list.

(a) The following are considered to be a contract modification (so long as it does not arise from an option available to either the insurer or policyholder) as they require the agreement of both insurer and policyholder to take affect (note, this does not include any requirement to notify the other party in order to exercise the option):

   (i) an increase or decrease in the nature or level of benefits under the contract, note these could include changes to extend or reduce the period of cover under the contract (i.e., affect the contract boundary) - unless they arise from the exercise of an option under the contract, or they only effect coverage beyond the contract boundary (refer Chapter 1);

   (ii) the addition or removal of benefits under the contract;

   (iii) the addition or removal of coverages under the contract;

   (iv) the addition or removal of options or guarantees available under the contract;

   (v) any change to premiums;

   (vi) any change of reinsurance contracts terms and conditions requiring the consent of both parties;

   (vii) by change to contractual terms arising from change in regulation;

(b) The following are considered not to be a contract modification:

   (i) the exercise of any options available to the policyholder under the terms of the contract (or law), within the contract boundary, that do not require the agreement of the insurer (this does not include any requirement to notify the other party in order to exercise), for example:

      • an option to renew the contract under the terms of the contract without further underwriting;

      • an option to surrender the contract or to cease paying premiums while still receiving benefits under the contract;

      • exercise of a contractual right to suspend and later resume cover under the contract without a new risk assessment;

      • an option to increase cover on renewal e.g., with consumer price index or at other times under the contract (e.g., guaranteed future insurance options) without further underwriting;

      • contracts arising from guaranteed insurability options as these form part of the original contract terms and are neither a new contract nor a contract modification (e.g., guaranteed annuitisation option under a deferred annuity contract);
(ii) the exercise of any options available to the insurer under the terms of the contract (or law), within the contract boundary, that do not require the agreement of the policyholder (the need to notify the other party to exercise the option does not mean their agreement is required, unless they have right to refuse the exercise of the option), for example:

- changes to premium or benefits permitted under terms of the contract, law or regulation. Note:
  - if the policyholder has the right to terminate the contract upon such a change, this does not mean agreement of both parties is required for the insurer to exercise the right to make such changes, simply that it gives the policyholder rights. In both cases they can be exercised without the agreement of the other party and hence these are not contract modifications;
  - where the insurer has the right or practical ability to change the premium in such a way that the payment of that premium is outside of the boundaries of the contract (refer to chapter 1) then it creates a new contract which is to be measured as such.

14.4. How are changes that are not contract modifications treated?

Changes that are not contract modifications (see question 14.3) form part of the expected cash flows under the contract (see Chapter 2) so long as they are within the contract boundary (see Chapter 1). That is both when:

a) measuring it upon initial recognition under paragraphs 32 -35, paragraphs B61 and B62; and

b) upon subsequent measurement under paragraph 40.

14.5. What about the exercise of a contractual option to add features that is outside the contract boundary?

A special case may occur if there is a contractual right to add new features to the original contract which could be outside the contract boundary because the entity is able to reprice or underwrite the contract for the additional feature added at the time it is added.

IFRS 17 treats cash flows outside the contract boundary as relating to future insurance contracts (paragraph 35) and such a new feature might be eligible to be treated as a new contract.

The treatment of contractual options and their interaction with the contract boundary was discussed at the IASB May 2018 TRG meeting (see AP03 Cash flows within the contract boundary and the IASB Summary of the May TRG Meeting).

It was observed by the TRG, that unless the contractual option of itself, even before exercise, qualifies as a separate contract (see IASB Feb 18 TRG paper AP01 Separation of insurance components of a single insurance contract and IASB TRG summary for the limited circumstances in which this may apply), then it is a contractual feature of the
insurance contract. In that case it is included in measurement of the original contract to the extent it is with in the contract boundary.

The staff view was that:

- as the unit of account is the contract as a whole, the contract boundary depends on the substantive rights and obligations as a whole; and
- the ability to reprice a part (e.g., the feature being added on exercise of the option) does not mean that part has a different contract boundary.
- If the addition, upon exercise of the option, was able to be repriced at time of exercise, then the insurer would need to decide whether there was any contractual obligation that needed to be measured prior to exercise.

Also, it may not be practicable, where the new feature is not distinct (i.e., the cash flows of the new feature and the original contract are highly interrelated), to treat it as a separate new contract.

If not distinct, then the addition of new features that are outside of the contract boundary (e.g., because they can be underwritten at the time of exercise at an appropriate price for the change in insurance risk, if the alternative TRG view is taken) might be treated as a contract modification at the time of addition, as the ability to underwrite the new feature effectively means the consent of both parties is required. An example of such a feature is the reduction of payment limits (with risk assessment for the reduction) that occurs in German Health insurance.

If the contract modification is not a specified modification under paragraph 72, then paragraph 73 applies, i.e., the contract is not de-recognised and the changes in cash flows caused by the modification are treated as changes in estimates of fulfilment cash flows.

Specified Modifications

14.6. Which are the specified contract modifications that result in the derecognition of the original and recognition of the modified contract as a new contract?

These are those contract modifications specified in paragraph 72, (“specified contract modifications”). The discussion in the Basis for Conclusions (see BC317 – BC320) indicates that these criteria in paragraph 72 capture modifications that IASB sees as resulting in significantly different accounting treatment. For example, if the modified terms had applied at inception, they would have caused differences in the applicability of IFRS17, or the separation of components, or the contract boundary (only if substantially different), or the applicability of the measurement model of the original contract.

The specified criteria are such that had the contract had been written at inception as now modified, it would:

- not have been classified as an insurance contract (see Chapter 1); or
- have been included in the different group from the one it was included in at initial recognition; or
• have a substantially different contract boundary; or
• have had different components separated, resulting in a different insurance contract for IFRS 17; or
• if the PAA was applied to the contract and it would not have qualified (see Chapter 7); or
• have qualified (or ceased to qualify) for treatment as an insurance contract with direct participation features.

14.7. How do contract modifications or the exercise of options available under the contract influence the contract boundary?

The contract boundary is re-assessed in each reporting period (see paragraph B64) and ends when the criteria of paragraphs 34 are fulfilled (see Chapter 1).

14.8. What qualifies as a substantially different contract boundary for the purposes of paragraph 72?

The intent in setting the criteria in paragraph 72 was to capture those contract modifications that would result in a significantly different accounting treatment (see BC317-BC320) for the modified contract had the new terms always applied and only those contract modifications (see BC320).

This indicates that it is possible the criteria for assessing if the change in contract boundary is substantial, if it had occurred at inception, might impact on the accounting treatment.

A contract modification that changes the contract boundary in such a way that, if the contract had been written at inception as modified, it would:

• have not qualified for the PAA, when it was being accounted for under the PAA; or
• would have been included in a different group

is clearly a contract modification that results in a significantly different accounting treatment, as it is captured under the other criteria in paragraph 72.

Other contract boundary changes that possibly could be considered to result in a significantly different accounting treatment include but are not limited to:

• a change such that the renewal of the contract is now outside the contract boundary (e.g., the modification gives the insurer the right to reprice the contract at renewal) so that the contract becomes eligible for the PAA upon renewal; or
• a change to the contract boundary that has a substantial effect on the contract’s CSM release pattern.

Note that, if the relevant criterion is the impact of the change in contract boundary the impact of any other modifications to the contract on the contract’s CSM release pattern would, if material, need to be excluded from this assessment. For example, if the criterion is simply the change in the contract boundary itself, then a change that increased or
decreased the contract boundary by 50% or more at inception of the contract, might be a substantial change, but one that changed it by 20% or less might not be a substantial change, e.g.,

- The extension of a contract term from 20 years to 40 years might be substantial; and
- The extension of a contract that originally provided coverage from age 30 up to age 60 to age 65 might not be substantial.

It should be noted that these examples are for illustrative purposes only and that every case needs to be considered on its own merits.

Accounting for specified contract modifications

14.9. How are specified contract modifications accounted for?

The entity:

(a) derecognises the contract being modified from the group to which it was allocated at inception by:

- setting the contribution of its fulfilment value, including the risk adjustment and incurred claims, to the group to zero (paragraph 76 (a));
- adjusting the number of coverage units for expected remaining coverage (paragraph 76(c));
- adjusting the CSM of the group to the extent required by paragraphs 44(c) and 45(c) for the difference between (paragraph 77(a)):
  - the reduction in fulfilment value of the group from setting that for the contract prior to modification to zero (paragraph 77(a)(i)); and
  - the premium it would have charged for a new contract issued at the date of contract modification with equivalent terms, net of any additional premium charged for the modification (paragraph 77(a)(iii));
- per paragraphs 44(c) and 45(c), the CSM can only be adjusted to the extent that the adjustment does not reduce the CSM below zero, except in the case of reinsurance held. If there is a loss component already, paragraphs 44(c)(ii), 45(c)(iii) and 50(b) apply;

and

(b) recognises the modified contract as a new contract as at the date of modification under IFRS 17 assuming the net equivalent premium noted above was paid as at the date of modification (see paragraph 77(b)).

14.10. If the insurer does not have contracts with equivalent terms, how is the premium determined?
The premium is the price that the entity would have charged the policyholder if it had entered into a contract with equivalent terms at the date of the actual modification (see paragraph 77(a)(iii)).

The assumptions used in determining the premium would usually be consistent with those used in determining the liability arising from the modified contract at the date of actual modification, except for the CSM.

For example, the premium might be determined as the sum of:

- the fulfilment cash flows (the unbiased expected present value of the future cash flows, excluding the premium being determined and including any taxes on the premium, acquisition costs for the modified contract, and an adjustment for risk);
- any other elements not included in fulfilment cash flows under IFRS 17 that the entity would normally include in setting premiums, e.g., general overheads and costs not directly attributable to a portfolio of insurance contracts and charge for capital; and
- the CSM after allowing for any elements not included in fulfilment cash flows, that reflects the entity’s current approach to profit targets when pricing for similar business.

Note, this may not be the same as the fair value of the modified contract, and the premium possibly could differ from fair value because:

(a) it uses entity-specific assumptions for some inputs, including the degree of risk aversion, whereas fair value typically uses market participant assumptions in all cases;

(b) it excludes the entity’s own non-performance risk, whereas fair value would include the entity’s own non-performance risk; and

(c) it includes the entity’s targets for CSM, whereas fair value includes no such margin, although fair value implicitly includes a current value for any additional margin that market participants would require.

Other contract modifications

14.11. What other types of contract modifications are there?

Apart from specified contract modifications, as per paragraph 72, there are other contract modifications. Examples could include:

- Addition or Removal of benefits, where they do not cause the contract to fall into another portfolio and hence different group;
- Increase or reduction in benefits, where they do not change grouping;
- Changes to what is covered, e.g., an extension or renovation under home insurance, or a new car under motor insurance; or
• Extension or reduction of the contract term, with no substantial change in benefit levels, provided this does not materially change the contract boundary or change eligibility for PAA.

14.12. How are other contract modifications accounted for?

Contract modifications not specified in paragraph 72 are accounted for by treating the resulting changes in the fulfilment cash flows (i.e., expected cash flows, risk adjustment) as a change in estimates as per paragraphs 40-52 (see paragraph 73).

Derecognition

14.13. When can contracts be derecognised?

Contracts can be derecognised only when:

• A specified contract modification occurs (see question 1.6 above), in this case the modified contract is treated as a new contract which assumes all obligations arising from the contract pre and post modification; or

• A contract is transferred to a third party (see paragraph 77 and question 14.14 below), this applies only when the contract is transferred as a whole including any obligation for incurred claims arising from past coverage, otherwise the contract in full has not been extinguished and cannot be derecognised as per paragraph 74; or

• All obligations under the contract are extinguished (see question 14.15 below). This includes not only the liability for future coverage but also for incurred claims arising from past coverage (see paragraph 74(a)).

14.14. How are contracts that are transferred to a third party derecognised?

In a similar way to the derecognition of a contract upon a specified contract modification (per the paragraph 72 criteria) that is the contract being transferred is derecognised from the group to which it was allocated at inception by:

• setting the contribution of its fulfilment value (including the risk adjustment and incurred claims) to the group to zero;

• adjusting the number of coverage units (see paragraph.76(c))

• adjusting the CSM of the group for the difference between:
  o the reduction in the insurance contract liability of the group from setting that for the contract prior to modification to zero; and
  o the premium charged by the third party for transfer of the contract.

14.15. How are contracts derecognised other than due to a specified contract modification or transfer to a third party?
In a similar way to the derecognition of a contract upon a specified contract modification (per paragraph 72 criteria), that is the contract being transferred is derecognised from the group to which it was allocated at inception by:

- setting the contribution of its fulfilment value (including the risk adjustment and incurred claims) to the group to zero;
- adjusting the number of coverage units (paragraph 76(c));
- adjusting the CSM of the group for the reduction in fulfilment value of the group from setting the fulfilment value relating to future service for the contract being derecognized to zero.

14.16. What if only the obligation for future coverage is transferred to a third party

In this case, the contract does not qualify for derecognition under paragraph 77 and is treated as a contract modification.

Application to Reinsurance and Premium Allocation Approach

14.17. How are modifications to reinsurance contracts accounted for?

Reinsurance contracts are insurance contracts and the modifications to them are accounted for in the same way as for other insurance (paragraph 4), see also chapter 9.

14.18. How do modifications to underlying insurance contracts affect the subsequent measurement of the reinsurance contract?

To the extent that they change the expected cash flows under the reinsurance contract, they are:

- reflected in the re-measurement of the reinsurance contract (as per paragraphs 40-46 and 60-68); and
- not reflected in the CSM of the reinsurance contract to the extent that they do not adjust the CSM of the underlying group of insurance contracts (see paragraph 66(c)) and relate to future service.

14.19. How are contract modifications and derecognition accounted for under the PAA?

The requirements of paragraphs 73, 76 and 77 presume that the contract is being measured under the GMA. Where PAA applies to a contract (and in the case of a contract modification it continues to qualify for PAA), one possible interpretation is that they have no effect for PAA contracts.

Another possible approach is to apply the requirements of paragraphs 73, 76 and 77 appropriately modified for PAA, e.g.,

(a) For non-specified contract modifications, as per the answer to Q14.12 and Q14.15, (because a change in estimates under PAA only impacts the liability for incurred
claims as per paragraph 40 (b)) this element would reflect this change if appropriate. However, if the contract modification where to:

(i) cause the group of which it is a part to be viewed as onerous, paragraphs 57 and 58 would apply and liability for remaining coverage would also change as per these paragraphs; or

(ii) cause the premiums received to change then this would be reflected in the liability for remaining coverage as per paragraph 55.

(b) For specified contract modifications, the answer to Q14.9 applies, modified for PAA as follows:

(i) de-recognises the modified contract from the group of which it is part by setting the contribution of its carrying value to the group including liability for incurred claims to zero, consistent with paragraph 76 (a); and

(ii) recognises the modified contract as a new contract as at the date of modification under IFRS 17 assuming the premium it would have charged for a new contract issued at the date of contract modification with equivalent terms, net of any additional premium charged for the modification (paragraph 77(a)(ii)) was received as at the date of modification (paragraph 77(b)).

(c) When derecognising a contract, the answer to Question 14.15 applies, modified for PAA as per (b) (i) above.

(d) When derecognising a contract upon transfer to another party, the answer to Question 14.14 applies, modified for PAA as per (b)(i) above.

14.20. What if a modified contract was part of an Onerous Group?

If the modification is not specified in paragraph 72, then paragraph 73 applies and the changes in estimates of fulfilment cash flows are treated in accordance with paragraphs 50 & 51 in the same way as any other subsequent change in fulfilment cash flows under IFRS 17.

If the modification is specified in paragraph 72, then it is treated as per paragraphs 74-77, (see Question 14.9) and there is no CSM to be adjusted in respect of the Onerous Group to which the contract was allocated at inception. However, as noted in Question 14.9 it is allocated to the loss component as required by paragraphs 44(c)(ii), 45(c)(iii) and 50(b) unless measured under PAA.
Chapter 15 - Measurement, Presentation and Disclosure

Before consulting this chapter, be sure to read the Introduction to this IAN, particularly the sections on References to IFRS 17, Materiality and Proportionality

15.A What does this chapter address?

This chapter considers the general requirements for presentation of financial information under IFRS contained in IAS 1 as well as the specific additional requirements in IFRS 17. It also provides general comments on the disclosures required to explain the presentation such as the required reconciliations. This Chapter discusses the additional requirements of IFRS 17, what constitutes revenue and expenses, how experience variances are presented, what is to be reported in the Statement of Financial Performance versus Other Comprehensive Income, the level of aggregation to be used in presentation and disclosure, and required reconciliations. This chapter also covers changes in presentation permitted or required when using the Premium Allocation Approach (PAA), but differences in presentation for the Variable Fee Approach (VFA) are covered in the chapter 8 of this IAN on contracts with participation features.

This chapter is split into three sections discussing in

- Section A – Measurement
- Section B – Presentation and
- Section C – Disclosures

However, it should be noted that as there is much overlap between these subjects one will need to read the whole chapter to appreciate the subject in total. These three sections address the following subjects:

- Overview of IFRS 17 presentation;
- Statement of financial position;
- Statement of financial performance;
- Presentation: timing of cash flows;
- Presentation of acquisition costs and other insurance expenses;
- Presenting other features of IFRS 17 measurement;
- Presentation for different types of entity; and
- Interim reporting, disclosures and transition to IFRS 17.

15.B Which sections of IFRS 17 address this topic?

Paragraphs 78 to 132 and B120 to B137 set out the requirements on this topic.

Paragraphs BC328 to BC366 also provide background on the subject.
15.C What other IAA documents are relevant to this topic?

None
Overview of IFRS Presentation

15.1. What is meant by “presentation” in IFRS 17?

IFRS 17 sets out the items that will be presented in the statement of financial position (a term used in IFRSs for balance sheet) in paragraphs 78 to 79 and in the statement(s) of financial performance (a term used in IFRSs for the income statement or statement of profit or loss) in paragraphs 80 to 92 and B120 to B136. In addition to the profit or loss, the statement of financial performance also includes changes in the statement of financial position not included in the profit or loss, which are referred to as “other comprehensive income” or “OCI”.

Insurance contracts are not included in IFRS 17 presentation that relate to periods after the date of derecognition of those contracts.

Below is an illustrative example statement of financial position and statement of comprehensive income under IFRS 17 taken from selected illustrative disclosures published by EY. This illustrative example reflects certain options an entity might use but others may well choose other options.
Statement of financial position

<table>
<thead>
<tr>
<th>In €000</th>
<th>Notes</th>
<th>As at 31 December</th>
<th>As at 1 January</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2021</td>
<td>2020</td>
</tr>
<tr>
<td><strong>Assets</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash and cash equivalents</td>
<td>9</td>
<td>180</td>
<td>57</td>
</tr>
<tr>
<td>Equity and debt instruments at fair value through profit or loss</td>
<td>10</td>
<td>6,597</td>
<td>5,452</td>
</tr>
<tr>
<td>Debt instruments at fair value through other comprehensive income</td>
<td>11</td>
<td>1,036</td>
<td>987</td>
</tr>
<tr>
<td>Debt instruments at amortised cost</td>
<td>12</td>
<td>12</td>
<td>102</td>
</tr>
<tr>
<td>Reinsurance contract assets</td>
<td>12</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Deferred tax assets</td>
<td>12</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other assets</td>
<td>12</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total assets</strong></td>
<td></td>
<td>22,151</td>
<td>20,086</td>
</tr>
<tr>
<td><strong>Liabilities</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current tax liabilities</td>
<td>12</td>
<td>140</td>
<td>175</td>
</tr>
<tr>
<td>Insurance contract liabilities</td>
<td>12</td>
<td>17,530</td>
<td>16,618</td>
</tr>
<tr>
<td>Reinsurance contract liabilities</td>
<td>12</td>
<td>25</td>
<td>24</td>
</tr>
<tr>
<td>Deferred tax liabilities</td>
<td>12</td>
<td>143</td>
<td>46</td>
</tr>
<tr>
<td>Other payables</td>
<td>12</td>
<td>210</td>
<td>190</td>
</tr>
<tr>
<td><strong>Total liabilities</strong></td>
<td></td>
<td>18,048</td>
<td>17,053</td>
</tr>
<tr>
<td><strong>Equity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Issued capital</td>
<td>12</td>
<td>150</td>
<td>150</td>
</tr>
<tr>
<td>Retained earnings</td>
<td>12</td>
<td>3,873</td>
<td>2,835</td>
</tr>
<tr>
<td>Fair value reserve</td>
<td>12</td>
<td>268</td>
<td>126</td>
</tr>
<tr>
<td>Insurance/reinsurance finance reserve</td>
<td>12</td>
<td>(188)</td>
<td>(78)</td>
</tr>
<tr>
<td><strong>Total equity</strong></td>
<td></td>
<td>4,103</td>
<td>3,033</td>
</tr>
<tr>
<td><strong>Total liabilities and equity</strong></td>
<td></td>
<td>22,151</td>
<td>20,086</td>
</tr>
</tbody>
</table>

The accounting policies and Notes on pages 11 to 81 form part of, and should be read in conjunction with, these financial statements.
Statement of profit or loss and other comprehensive income

For the year ended 31 December 2021

<table>
<thead>
<tr>
<th>In €000</th>
<th>Notes</th>
<th>2021</th>
<th>2020 restated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insurance revenue</td>
<td>6</td>
<td>2,581</td>
<td>2,293</td>
</tr>
<tr>
<td>Insurance service expense</td>
<td>12</td>
<td>(1,541)</td>
<td>(1,411)</td>
</tr>
<tr>
<td><strong>Insurance service result before reinsurance contracts held</strong></td>
<td></td>
<td>1,040</td>
<td>882</td>
</tr>
<tr>
<td>Allocation of reinsurance premiums</td>
<td>7</td>
<td>(448)</td>
<td>(546)</td>
</tr>
<tr>
<td>Amounts recoverable from reinsurers for incurred claims</td>
<td></td>
<td>279</td>
<td>348</td>
</tr>
<tr>
<td><strong>Net expense from reinsurance contracts held</strong></td>
<td>7</td>
<td>(169)</td>
<td>(198)</td>
</tr>
<tr>
<td><strong>Insurance service result</strong></td>
<td></td>
<td>871</td>
<td>684</td>
</tr>
<tr>
<td>Interest revenue calculated using the effective interest method</td>
<td></td>
<td>831</td>
<td>622</td>
</tr>
<tr>
<td>Other interest and similar income</td>
<td></td>
<td>366</td>
<td>299</td>
</tr>
<tr>
<td>Net fair value gains/(losses) on financial assets at fair value through profit or loss</td>
<td></td>
<td>104</td>
<td>(14)</td>
</tr>
<tr>
<td>Net fair value gains/(losses) on derecognition of financial assets measured at fair value through other comprehensive income</td>
<td></td>
<td>6</td>
<td>-</td>
</tr>
<tr>
<td>Impairment loss on financial assets</td>
<td></td>
<td>(5)</td>
<td>(2)</td>
</tr>
<tr>
<td>Net foreign exchange (expense) / income</td>
<td></td>
<td>(50)</td>
<td>22</td>
</tr>
<tr>
<td><strong>Total investment income</strong></td>
<td>8</td>
<td>1,252</td>
<td>927</td>
</tr>
<tr>
<td>Insurance finance expenses for insurance contracts issued</td>
<td>8</td>
<td>(742)</td>
<td>(673)</td>
</tr>
<tr>
<td>Reinsurance finance income for reinsurance contracts held</td>
<td>8</td>
<td>98</td>
<td>119</td>
</tr>
<tr>
<td><strong>Net insurance financial result</strong></td>
<td></td>
<td>(644)</td>
<td>(554)</td>
</tr>
<tr>
<td>Other income and expense</td>
<td></td>
<td>(210)</td>
<td>(191)</td>
</tr>
<tr>
<td><strong>Profit before tax</strong></td>
<td></td>
<td>1,269</td>
<td>866</td>
</tr>
<tr>
<td>Income tax expense</td>
<td></td>
<td>(231)</td>
<td>(172)</td>
</tr>
<tr>
<td><strong>Profit for the year</strong></td>
<td></td>
<td>1,038</td>
<td>694</td>
</tr>
</tbody>
</table>
| Other comprehensive income
  OCI to be reclassified to profit or loss in subsequent periods |       |               |               |
| Change in fair value of financial assets | 8     | 179          | (35)          |
| Amount reclassified to profit or loss | 8     | (1)          | 2             |
| Debt instruments at fair value through other comprehensive income | 8     | 178          | (33)          |
| Insurance finance expenses for insurance contracts issued | 8     | (194)        | 38            |
| Reinsurance finance income for reinsurance contracts held | 8     | 56           | (9)           |
| **Net insurance financial result** |       | (138)        | 29            |
| Income tax relating to items that may be reclassified |       | (8)          | 1             |
| **Total other comprehensive income** |       | 32           | (3)           |
| **Total comprehensive income** |       | 1,070        | 691           |

The accounting policies and Notes on pages 11 to 81 form part of, and should be read in conjunction with, these financial statements.
The following commentary is based on GMA. Other treatment may apply for PAA and this is discussed in the discussion below.

The insurance service result (paragraphs 83-86 and B120-B127), includes:

- Insurance revenue, comprising the release of expected claim and other expense cash flows, release of CSM and release of risk adjustment for the period; and

- Insurance service expenses, comprising actual incurred claims and other expenses, including acquisition expenses, for the period.

Insurance finance income or expenses (refer paragraphs 87 – 92 and B128 – B136), for the effect of the time value of money and financial risk, includes:

- Investment income earned on assets during the period, and

- The effect of discounting of the expected future cash flows.

The insurance service result can be broadly thought of as the component of the result relating to claims and underwriting risk while insurance finance income or expenses can be thought of as the component relating to financial and market risk.

The insurance finance income and expenses can be disaggregated between the profit or loss and other comprehensive income (OCI) in order to reduce accounting mismatches (refer paragraphs 88(b) and B129 – B130).
Section A – Measurement of line items in the statement of financial performance

This section considers the general requirements for measurement of key line items for insurance contracts in the statement of financial performance in IFRS 17. It covers changes in presentation permitted or required when using the PAA, but differences in presentation for the VFA are covered in the chapter 8 of this IAN on contracts with participation features.

15.2. How is insurance revenue, gross of reinsurance, measured?

IFRS 17 paragraph 83 states that “[..]Insurance revenue shall depict the provision of coverage and other services arising from the group of insurance contracts at an amount that reflects the consideration to which the entity expects to be entitled in exchange for those services.[..]”

The measurement of insurance revenue is set out in paragraphs B120 to B127. Some of the key themes from these paragraphs are discussed below, but it is important to refer to the specific requirements in IFRS 17 as well.

In effect, insurance contract revenue represents the value of the services that the entity expected to provide during the reporting period. This includes amounts in the statement of financial position at the start of the reporting period for the value of future coverage, including the release of CSM and risk adjustment, which will not be included in the statement of financial position at the end of the reporting period as the related coverage is provided in the reporting period. This component of the revenue is based on a view of what services would be provided in the financial reporting period that were already included in the opening balance sheet.

It is necessary to also include revenue in respect of coverage provided by insurance contracts which were recognised for the first time during the financial reporting period and provided coverage during that period. The amount of this revenue is based on the value of the contracts at initial recognition and the portion of coverage and other services provided by those contracts during the reporting period.

Over the lifetime of the contract, the total revenue is the sum of the premiums received, adjusted for a financing effect and excluding investment components. It is still the premium but, for long term business, recognised in a very different way and timing compared to most accounting bases applying prior to IFRS 17.

Insurance revenue related to insurance acquisition cash flows is measured by allocating a portion of premiums related to recovering these cash flows to each reporting period. This allocation is based on the passage of time. An equal and offsetting amount is recognised in insurance service expenses (see paragraph B125).

Under the PAA, insurance revenue is measured as the expected premium receipts adjusted to reflect the time value of money and the effect of financial risk where significant (excluding any investment component) allocated to the period. In addition, paragraph 56 specifies that the time value of money need not be reflected if the time between premium
receipt and provision of coverage is one year or less. The allocation is based on the passage of time, unless the expected pattern of release of risk differs significantly from the passage of time, in which case it should be allocated based on the expected timing of incurred insurance service expenses (see paragraph B126). Liability for remaining coverage is defined in paragraph 40(a) and Appendix A. Paragraph 55 specifies the liability for remaining coverage for the PAA. See also Chapter 7.

The impact of reinsurance is discussed in question 15.9.

15.3. What is included in insurance service expenses?

The items included in insurance service expenses are identified in paragraph 103b as.

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, i.e., changes in fulfilment cash flows relating to the liability for incurred claims; and

iv. changes that relate to future service, i.e., losses on onerous groups of contracts and reversals of such losses.

As discussed in question 15.34 amortisation of insurance acquisition cash flows are equal and offsetting to the amount included in insurance revenue.

The term “liability for incurred claims” is defined in paragraph 40(b) and in Appendix A.

15.4. What is the insurance service result?

Paragraph 80 details that the insurance service result comprises the insurance revenue and insurance service expenses, which are presented excluding investment components. Insurance revenue and insurance service expenses are discussed in the previous two questions and the exclusion of the investment component is discussed in the question below.

15.5. What does it mean to exclude the investment component from the presentation of the insurance revenue and insurance services expenses?

This question is primarily interested in the presentation on investment components that are not distinct. Appendix A defines investment components as “The amounts that an insurance contract requires the entity to repay to a policyholder even if an insured event does not occur.” The paragraph below briefly explains the treatment of distinct investment components, which are excluded from revenue and expenses and the subsequent paragraph clarifies what are investment component under IFRS 17. It will be necessary to identify which insurance contracts have investment components that are not distinct but need to be presented separately.
The IASB has separate financial reporting standards for financial instruments (IFRS 9) and contracts with customers (IFRS 15). Insurance contracts typically combine elements of the characteristics of both financial components and service components. In paragraph IN4 the IASB explains, in its rationale for implementing IFRS 17, long-term and complex insurance risks are difficult to reflect in the measurement of insurance contracts, are not typically traded in markets and may include a significant investment component which, poses further measurement challenges. Paragraph IN7 explains that IFRS 17 results in the liability for a group of insurance contracts relating to remaining future service under those contracts being measured broadly consistent with IFRS 15 except that the liability often includes an investment component typically not in contracts within the scope of IFRS 15. In IFRS 17 reporting entities are required to distinguish between the financial and non-financial performance from insurance contracts.

An investment component of an insurance contract is the amounts the entity is required to pay to the policyholder even if the insured event does not occur (Appendix A). For example, where there are guaranteed benefits, some profit commission arrangements or where there is a fund that is repaid to the policyholder if it is not required to settle claims or pay benefits. For example, guaranteed amounts or repayments of funds payable by the entity when a contract lapses or is surrendered, may meet the IFRS 17 definition of investment components as the payments do not depend on an underlying insured event.

Distinct investment components, will already have been separated from insurance contracts and reported for in accordance with IFRS 9 (see paragraphs 10-12 of IFRS17). This question is referring to investment components that are not distinct. Paragraph 13 makes clear that later references to investment components in IFRS 17 refer to treatment of indistinct investment components that have not already been separated and reported as if they were separate investment contracts.

IFRS 17 requires that insurance service revenue and insurance service expenses exclude investment components (refer to paragraphs 42(b), 55(b)(vi), 84, 85,103(b)(i)), B120, B123(a)(ii), B124(a)(ii)). Paragraph 103 (c) requires that investment components excluded from insurance revenue and insurance service expenses are disclosed separately in the reconciliations.

15.6. How is the investment component of an insurance contract in scope of IFRS 17 measured?

It is not necessary to explicitly measure investment components in order to be able to exclude them from insurance revenue and insurance service expenses. The requirement is only to exclude the amounts identified as arising from investment components at the reporting date. This is explained in BC34.

IFRS 17 identifies the determination of these investment components as a significant judgement and requires disclosure of the inputs, assumptions and estimation techniques used (see paragraph 117(c)(iv)).
There is a specific requirement to allow for the difference between the expected and actual value of investment components that become payable in the period, in the CSM (paragraph B96(c)). See Chapter 6 for further information on the CSM.

At the time of drafting, it seems likely that reporting entities will need to define a basis for measuring investment components of insurance contracts being reported under IFRS 17.

15.7. What is the insurance finance income or expense and how can it be presented in the statement of financial performance?

Paragraph 87 defines insurance finance income or expenses as the change in insurance contract liabilities arising from the effect of the time value of money or changes in the time value of money (which means the unwinding of the discount rates applied to the fulfilment cash flows, changes in the discount rates applied to the fulfilment cash flows and the accretion of interest on the CSM) and the effect of financial risk or changes in financial risk.

Groups of contracts with direct participation features that are onerous, may experience gains or losses due to the time value of money or financial risk that would otherwise result in an adjustment to the CSM if the contracts were profitable. These gains or losses arise when the carrying amount of the CSM is exceeded by the entity's share of a decrease in the fair value of the underlying items or increases in the fulfilment cash flows relating to future service (or when these amounts reverse due to the entity's share of an increase in the fair value of the underlying items or decrease in the fulfilment cash flows relating to future service). These gains or losses are excluded from the insurance finance income or expenses and reported in the insurance service expenses.

An accounting policy choice needs to be made between reporting insurance finance income or expenses entirely in profit or loss, or splitting it between profit or loss and OCI. The reasons for allowing this choice of presentation are considered in Chapter 3 on Discounting.

If an entity chooses to split insurance finance income or expenses for a portfolio of insurance contracts between profit or loss and OCI, the standard sets out the presentation requirements in two categories:

1. Contracts with direct participation features for which the entity holds the underlying items; and
2. All other contracts.

The basis for determining the discount rate that applies when calculating the insurance finance expense is covered in Chapter 3.

15.8. When do you not need to present insurance finance expense?

Paragraph 56 indicates that under the PAA an “entity is not required to adjust the carrying amount of 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 coverage and the related premium due date is no more than a year.” In this case no insurance finance expense calculation is needed.

15.9. Are ceded reinsurance premiums and recoveries included in revenue or as negative expenses?

Insurance contract revenue is calculated only in relation to groups of insurance contracts issued (paragraph 83).

Income and expenses from reinsurance contracts held is presented separately in the insurance service result from expenses and income from insurance contracts issued (paragraph 82). An entity may present income and expenses from a group of reinsurance contracts as a single amount or may present 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 (paragraph 86), excluding investment components (paragraph 85).

If the income and expenses from reinsurance contracts held are presented separately, paragraph 86 sets out that other reinsurance cash flows contingent on claims on the underlying contracts are presented as part of the claims that are expected to be reimbursed. However, other reinsurance cash flows that are expected to be received that are not contingent on the claims to the underlying contracts, e.g., some types of ceding commissions, are presented as a reduction to the premiums paid to the reinsurer.

Presentation: timing of cash flows

15.10. How are future premiums on existing insurance contracts allowed for in revenue, for example, instalment premiums, adjustment premiums and reinstatement premiums?

Paragraph B124 sets out that insurance revenue is for the reduction in the liability for remaining coverage because of services provided in the period. Consequently, only future premiums in respect of service provided in the period would be included in revenue for that period. This may include premiums that have fallen due but have not yet been received, for example, from brokers where balances are settled quarterly or where adjustment premiums are paid at the end of the coverage period relating to changes in exposure across the entire reporting period.

Future premiums, such as instalment premiums and reinstatement premiums, may relate to the provision of future coverage, not services provided in the period so will be included in the valuation of insurance contracts but are not included in revenue until the services are provided. This means that the value of premiums receivable will be recognised in the statement of financial position based on when those premiums will be received as they are within the contract boundary for insurance contracts within the scope of IFRS 17 but will not be included in the statement of financial performance until a subsequent reporting period when the services related to those premiums have been provided.
Future premium collections in some instances relate to coverage provided in the past, such as for retrospectively rated contracts and audit premiums found in some non-life policies. In that case, these future premiums might have already been reflected in a past income statement while still impacting the current statement of financial position.

Scope, recognition and contract boundary considerations are covered in Chapter 1.

15.11. How are premiums already paid and premiums to be paid in the future in relation to currently held ceded reinsurance contracts shown in the statements of financial position and financial performance?

Premiums already paid to reinsurers are in the past so are not included in the valuation of reinsurance contracts held in the statement of financial position.

Future premiums due to be paid in respect of currently held reinsurance contracts that meet the recognition requirements and are within the contract boundary are included in the valuation of reinsurance contracts in the statement of financial position. They will be included in insurance expense in the statement of financial performance when the services are provided by the reinsurer which may be in a subsequent reporting period.

15.12. How is the impact of unexpected policy terminations determined and reflected in the insurance revenue?

Under the general model, paragraph B124 sets out that insurance revenue is for the reduction in the liability for remaining coverage because of services provided in the period.

B124a indicates that revenue includes “insurance service expenses incurred in the period (measured at the amounts expected at the beginning of the period)”. Therefore, insurance revenue reflects policy terminations expected at the beginning of the period and will not reflect unexpected policy terminations that occur during the period. If the change in the terminations changes the expected cash flows for future coverage then this adjusts the CSM.

If the unexpected terminations change the entity's view of risk which leads to a change in the valuation of the risk adjustment during the reporting period, this may change the amount of risk adjustment included in insurance revenue. If the change in the terminations changes the valuation of the risk adjustment for future coverage then this adjusts the CSM, see Chapter 5, which may affect the amount of CSM included in revenue in the period.

Unexpected termination in a reporting period may lead to changes in the assumption for terminations in respect of future coverage. The impact of changes to the assumptions for future terminations on the valuation of insurance contracts that do not result in an adjustment to the CSM (e.g., when the impact is a further loss on a group of onerous
contracts where the is no CSM) would be presented as an insurance expense in the period when the assumptions are updated but are not included in insurance revenue.

15.13. How is the impact of unexpected policy terminations determined and reflected in the insurance expense?

To answer this question, it is necessary to consider separately the impact of the unexpected policy terminations on the actual cash flows in the period and whether this changes the assumptions for the expected future cash flows for current service (i.e., the liability for incurred claims) and the expected future cash flows for future service (i.e., the liability for remaining coverage).

Assumptions about the number of policy terminations impact the likelihood of expected future cashflows and are taken into account in the timing and amount of cash flows for calculating the time value of money and the release of the CSM, whilst uncertainty about the level of future policy terminations is reflected in the risk adjustment.

**Presentation of changes to actual cash flows in the reporting period**

Where the level of policy terminations is different to that expected in the reporting period, the impact of the actual number of policy terminations will be reflected in the actual cash flows in the reporting period, which are included in the insurance expense for that period.

**Presentation of changes to expected future cash flows for the current or past coverage periods**

If the difference in actual policy terminations compared to those expected also leads to a change in the estimate of the fulfilment value for future cash flows for the liability for incurred claims (i.e., where the coverage has already expired), then the change in the valuation of the insurance contracts due to the change in assumptions for terminations is included in insurance service expense.

**Presentation of changes to expected future cash flows for future coverage**

Where the change in the valuation of insurance contracts relates to future coverage, the CSM may be adjusted. See Chapter 6 on the CSM for when and how changes in assumptions may lead to a change in the CSM. If the impact of the changes in assumptions in relation to future policy terminations cannot be offset by adjusting the CSM (i.e., because it relates to the current period and not future coverage), then the value of that impact of the change in assumptions is included in insurance expense.

**Disclosure of changes in termination rates**

There is no explicit requirement to present or disclose the impact of changes in the number of policy terminations separately and these changes in assumptions may be combined with other assumptions changes. However, where policy terminations are a key assumption to
the overall valuation, a reporting entity may consider that it would be appropriate to refer to changes in experience in the narrative disclosures describing the risk characteristics of the business (paragraphs 121-126) and consider whether it is appropriate to include the termination assumptions in the sensitivity analysis disclosures (paragraph 128-129). It may also be necessary to consider the significance of changes in termination rates when developing and explaining the reconciliations required in paragraphs 104-107.

Section B - Presentation

This section considers the general requirements for presentation of financial information under IFRS contained in IAS 1 as well as the specific additional requirements in IFRS 17. It also provides general comments on the disclosures required to explain the presentation such as the required reconciliations.

15.14. What are the general principles for IFRS presentation?

The general principles for presentation of financial statements under IFRS are set out in IAS 1 Presentation of Financial Statements, and these also apply to insurance contracts. In addition, IFRS 17 includes specific principles that only apply to insurance contracts. To understand the presentation requirements for insurance contracts under IFRS 17, it is necessary to consider IAS 1.

Paragraph 10 of IAS 1 sets out what a complete set of financial statements comprises. The key statements referred to are:

- The statement of financial position, which is traditionally referred to as the balance sheet under other reporting bases, and
- The statement of financial performance, which is also referred to as the statement of profit or loss and OCI (in IAS 1).

The statement of financial performance has three parts.

1. The top part presents sources of income and expenses that are included in profit or loss and ends with the assessment of profit or loss for the period.
2. Below this is presented sources of OCI that do not contribute to profit or loss.
3. Both these parts contribute to a total assessment of "comprehensive income" for the reporting period at the bottom of the statement.

IE185 includes an example of this presentation. While helpful for showing the three parts described above, this example is only intended to illustrate the amounts recognised as part of the insurance service result and not presentation requirements. For more details on the presentation requirements see Examples 3 and 9 of the IASB’s illustrative examples.

Amounts included in OCI typically include items that affect the financial position of the company but do not directly relate to the performance of the business in the reporting
period, for example, some unrealised gains on financial investments. In some cases there
are options for the reporting entity to elect whether performance is reported in OCI or in
profit / loss. In relation to insurance contracts, companies can choose in their accounting
policies whether to show movements in the value of insurance contracts arising from
changes in the current discount rates in the reporting period in profit or loss or as OCI.
Paragraphs 82 and 83 of IAS 1 set out what should be presented in profit or loss or in OCI.
IAS 1 paragraph 89 requires that all items of income and expenses should be included in
profit or loss unless an IFRS requires or permits otherwise. Paragraphs 90 to 96 of IAS 1
specify some items to be included in OCI. There is more specific guidance in individual
standards, such as in and IFRS 17 for insurance contracts.

Usually it is not necessary for an actuary working on the valuation of insurance contracts
to need to consider the presentation requirements set out in IAS 1 as the reporting entity’s
finance team will have considered how those presentation requirements will be met.
However, it is important to be aware that the presentation requirement in IFRS 17 should
not be applied in isolation but in the context of the overarching IFRS principles. IAS 1 makes
numerous reference to the IASB’s Conceptual Framework for Financial Reporting,
(“Conceptual Framework”). This describes the basic concepts that underlie the preparation
and presentation of financial statements for external users. The Conceptual Framework
serves as a guide to the IASB in developing future IFRSs and as a guide to resolving
accounting issues that are not addressed directly in an IAS or IFRS or Interpretation.

IAS 8 Accounting Policies, Changes in Accounting Estimates and Errors is another
overarching standard that may need to be considered when implementing and applying
IFRS 17. In the absence of a standard or an interpretation that specifically applies to a
transaction, management needs to use its judgement in developing and applying an
accounting policy that results in information that is relevant and reliable. In making that
judgement, IAS 8 paragraph 17 requires management to consider the definitions,
recognition criteria, and measurement concepts for assets, liabilities, income, and
expenses in the IFRS Framework.

In developing accounting policies in relation to IFRS 17, the entity may want to consider the
distinction between the need to make future changes to the estimation basis within the
context of the company’s relevant accounting policy and when it may be necessary to make
future changes to the companies account policies, which would require restatement of prior
year comparatives.

15.15. What principles of materiality apply to IFRS 17 presentation?

There is an IFRS Practice Statement on Making Materiality Judgements. Reporting entities
should have a basis for setting materiality for each set of financial statements and the same
materiality criteria should be applied to the application of IFRS 17. In the first instance it
would be appropriate to ask one’s principal what level of materiality should apply.
Although IAS 1 refers to separating material classes of similar items, IFRS 17 contains several levels of aggregation and disaggregation requirements, which also need to be taken into consideration for the purposes of presentation and measurement (see question 15.16 below). Materiality for presentation applies at the level of items required to be presented in the statement of financial position and statement of financial performance, not at the more granular level required for measurement. This means that where an assumption has a non-material impact on one class of business it may be regarded as a non-material assumption. However, even if an assumption has a non-material impact on each of several classes of business, it may still be necessary to consider whether the combined impact of that assumption on the reported line items is material to determine whether the assumption itself is a material assumption.

15.16. What is the level of disaggregation for insurance contracts presentation?

As discussed in Chapter 1, paragraphs 14-24 set out several requirements for the disaggregation of insurance contracts based on the definition of a portfolio; further segregation of onerous contracts from contracts that may become onerous in the future and from other contracts; and disaggregation of contracts issued more than one year apart. Similar principles also apply for reinsurance contracts held (paragraph 61). All these requirements apply to the measurement of insurance contracts and to reinsurance contracts held. Presentation and disclosures for insurance contracts and reinsurance contracts held does not necessarily need to be at this level of granularity. In particular, disclosures do not necessarily need to be at the insurance contracts group level as defined in paragraph 16. (For further information on the level of aggregation for measurement, please refer to chapter 5)

Paragraph 78 requires that reinsurance contracts held are presented separately from insurance contracts issued and further that these two groups should be further subdivided between groups of contracts that are onerous and those that are not. As the valuation of insurance contracts takes into account all future cash flows including future premiums it is possible that insurance contracts may be valued as assets rather than liabilities when the future premium income expected exceeds the future benefit payments, claims payments and expenses — for example, during the early stages of the coverage for contracts with regular or instalment premiums.

Paragraph 82 requires that income and expenses from reinsurance contracts held be presented separately from the expenses or income from insurance contracts issued.

IAS 1 (paragraphs 29-31) requires that each material class of similar items is presented separately. Paragraph 96 of IFRS17 provides examples of aggregation bases that might be appropriate for information disclosed about insurance contracts. Examples of aggregation bases that might be appropriate for information disclosed about insurance contracts are:

(a) type of contract (for example, major product lines);
15.17. What is segment reporting?

Although IFRS 17 sets requirements for the level of aggregation of insurance contracts in paragraph 96, it also refers to the requirements for reporting segments under IFRS 8, which already applies to insurance entities reporting under IFRS. It is only mandated for entities and groups with listed debt or equity, or those filing for a listing (IFRS 8 paragraph 2).

The core principle in IFRS 8 is that an entity should disclose information to enable users of its financial statements to evaluate the nature and financial effects of the business activities in which it engages and the economic environments in which it operates. IFRS 8 applies to individual financial statements for an entity and to the consolidated financial statements for a group.

Operating segments are identified on the basis of internal reporting about components of the entity that are regularly reviewed by management in order to allocate resources to the segment and to assess its performance. Similarly, the amounts reported are to be the measures used for internal reporting for these purposes. Disclosure includes information about how the entity identifies its operating segments and the types of products and services from which each segment derives its revenues.

An actuary considering how to apply IFRS 17 may also wish to consider the entity’s existing approach to reporting segments under IFRS 8 in order to consider the appropriate level of aggregation for insurance contracts in each component of the business.

Statement of financial position

15.18. What amounts are presented in the statement for financial position for insurance contracts?

As explained in the answer to question 15.16 above, IFRS 17 requires that groups of insurance contracts that are assets be presented separately from groups of insurance contracts that are liabilities. This is a change from IFRS 4 where, in some jurisdictions, insurance contracts are currently presented as one item. This may be operationally difficult as entities may not be set up to segregate the measurement of insurance contracts in this way when applying IFRS 17 for the first time.

“Insurance contracts” refers to all contracts issued by an entity that meet the IFRS 17 definition of an insurance contract (paragraphs 3-8), which includes reinsurance contracts issued and investment contracts with discretionary participating features. IFRS 17 also applies to reinsurance contracts held but IFRS 17 specifies where the requirements applying to reinsurance contracts held are different to those for insurance contracts issued. Please refer to chapter 9 on reinsurance.
Presentation of insurance contracts is after separating distinct investment components, distinct service components and, where required by IFRS 9, embedded derivatives (paragraphs 10-12), which are accounted for under IFRS 9 and IFRS 15.

Insurance and reinsurance contracts should be included in the statement of financial position when they meet the IFRS 17 recognition requirements (paragraphs 25-28 and 62), which are considered further in Chapter 10, and subject to the requirements for modification and derecognition (paragraphs 72-77), which are considered further in Chapters 1 and 14.

15.19. What amounts are presented in the statement for financial position for reinsurance contracts held?

As explained in the answer to question 15.16 above, reinsurance contracts held are to be presented separately from insurance contracts issued and reinsurance contracts that are liabilities are to be presented separately from those that are liabilities.

15.20. Can recoveries from ceded reinsurance be shown netted against insurance contract liabilities in the statements of financial position and financial performance?

No. Amounts in respect of reinsurance contracts held must be presented separately from amounts in respect of insurance contracts issued in the statements of financial performance and financial position and in the supporting disclosures required to explain these statements.

15.21. How are future cash flows that have fallen due but have not yet been received or paid shown in the statement of financial position (for example, premiums, claims, benefits, expenses and acquisition costs)?

The measurement of insurance contracts under IFRS 17 includes all expected future cash flows within the contract boundary. Hence, if these cash flows are expected to be received or paid, they would be included in the liability for remaining coverage, or possibly the liability for incurred claims for situations such as retrospective premium adjustments or audit premiums for certain non-life policies.

If there is a risk the cash flows may not be received the probability-weighting for those cash flows should be adjusted to reflect the likelihood of receipt.

Under PAA, only premiums received are included in the liability for remaining coverage. Hence if the premium is due but not received, this would not be included in the liability measurement.

This may represent a significant change from previous financial reporting bases. Typically, local reporting bases for long term insurance contracts have included the value of the insurer's rights to future premiums in the valuation of the insurance contracts. In contrast, for non-life insurance business where unearned premium reserves are held, the unearned
premium component of the technical provisions is often based on the total premium expected to be received, regardless of whether it has been received or not, and the portion of the premiums expected to be received in the future is presented as a receivable. Similarly, the reinsurer's portion of unearned premiums is based on the total premiums expected to be paid including amounts not yet paid where the latter are presented in the liability for payables.

15.22. How are cash flows paid for services not yet received shown in the statement of financial position? (For example, reinsurance premiums paid for cover that has not yet expired?)

The IFRS 17 measurement basis for amounts presented in the statement of financial position is a prospective cash flow basis. Cash flows already completed are not included in the measurement of insurance contracts issued or reinsurance contracts held.

Statement of financial performance

15.23. What line items are required in the statement of financial performance?

Paragraph 80 requires that, for insurance contracts, the entity includes the following line items in the statement of financial position:

- Insurance revenue;
- Insurance service expenses;
- Insurance service result (comprising the two items above); and
- Insurance finance income and expenses.

Presenting other features of IFRS 17 measurement

15.24. When is the value of options and guarantees and changes in the values of options and guarantees presented in the statements of financial position and financial performance?

Paragraph 11(a) requires embedded derivatives to be separated from host contracts and accounted for under IFRS 9. For all embedded derivatives that are not separated from the host contract, these are measured and presented under IFRS 17 and included as part of the fulfilment cash flows (see paragraph B65(d)).

15.25. When and where is the additional value for onerous contracts presented in the statement for financial position?

For all insurance contracts meeting the IFRS 17 recognition requirements at the reporting date, the additional value of onerous contracts is included in the value of insurance contracts. Paragraph 103(b)(iv) requires the disclosure of a reconciliation for the changes
in losses for onerous groups of contracts and the reversal of such losses over the
accounting period.

15.26. How is the value for onerous contracts at initial recognition and changes in that value at
subsequent measurement included in the statements for financial performance?

The illustrative examples include several examples considering the measurement of
onerous contracts. Example 1 (IE4-IE17), specifically example 1B, shows initial
measurement of an onerous contract. Example 2B (IE24-IE28) considers an example where
changes in fulfilment cash flows create an onerous group of insurance contracts and
shows a possible format for reconciliation of the changes in value of the insurance contract
(IE26-IE27) and shows the presentation in the statement of financial position and financial
performance (IE28). Example 8 (IE81-IE98) shows possible formats for the reconciliation
of the reversal of losses in an onerous group of insurance contracts.

15.27. How does presentation of financial position and financial performance differ for
contracts measured using the PAA?

There are no changes to the presentation requirements for entities using the PAA.
However, the amounts presented are based on the measurement amounts under the PAA
(see Chapter 7) and there are changes to the disclosure requirements explaining the
presentation.

Under the PAA the contribution towards the value of insurance contracts from the liability
for remaining coverage is the sum of the value of premiums allocated to the unexpired
portion of insurance contracts recognised at the reporting date plus any additional liability
for onerous contracts.

Insurance revenue under the PAA is the portion of expected premium receipts allocated in
respect of coverage provided over the reporting period.

Insurance finance expense may exclude the unwind of the discount rate on the value of the
unexpired coverage as entities using the PAA are not required to adjust for the time value
of money and the effect for financial risk if, at initial recognition, the entity expects that the
time between providing coverage and the related premium due date is no more than one
year or the financial effect is not significant (paragraph 56).

Similarly, where the coverage period for each contract in a group of contracts is no more
than one year, the entity may choose to recognise any insurance acquisition cash flows as
expenses when it incurs those costs (paragraph 59(a)). See also question 15.21 above.

Entities using the PAA are required to make additional disclosures as set out in paragraph
97.

Some of the requirements to disclose reconciliations (paragraphs 97-109) are amended or
not applied when using the PAA.
15.28. How are contracts measured using the variable fee approach presented?

Adjustments to presentation under the variable fee approach are explained in Chapter 7 on contracts with participating features and other variable cash flows.

Presentation for different types of entity

15.29. How does the presentation differ for mutual entities?

IAS 1 paragraph 6 explains that entities that do not have equity, such as some mutual funds, and entities whose share capital is not equity, such as some cooperative entities, may need to adapt the financial statement presentation of members’ or policyholders’ interests. Prior to implementation of IFRS 17, some entities presented a liability for unallocated divisible surplus to represent the surplus which had not been allocated between participating policyholders prior to reporting the financial statements.

Under IFRS 17 estimates of the expected cash flows to participating policyholders are included in the value of insurance contracts. Unallocated divisible surplus will not be presented as a separate item and the amount is included in the fulfilment cash flows. Accounting mis-matches could give rise to equity in mutual entities (see BC266 and BC267).

BC269 notes that a mutual entity can distinguish:

(a) in the statement of financial position, the liability attributable to policyholders in their capacity as policyholders from the liability attributable to policyholders with the most residual interest in the entity; and

(b) in the statement(s) of financial position, the 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.

15.30. How does the presentation differ for entities with run off business?

In this IAN, run off business refers to where an entity has ceased to issue new policies for part or all of its business but is continuing to manage previously issued contracts. (This is sometimes also referred to with regard to life / annuity business as “Closed books”) Provided that a business is a going concern, IFRS 17 presentation applies in the same way to reporting entities where some or all of the business is running off and to entities that continue to write new business.

IAS 1 requires that management of an entity reporting on an IFRS basis makes an assessment of the entity’s ability to continue as a going concern. An insurer or reinsurer may continue to be a going concern for IFRS reporting purpose even if all the business is discontinued. Where a reporting entity is not considered to be a going concern, IAS 1 requires additional disclosures which may need to be taken into consideration when applying IFRS 17.
15.31. How does IFRS 17 presentation results differ for consolidated financial statements?

There are no differences in the requirements for presentation by a solo insurer or reinsurer and for a group that has issued insurance contracts within one of its group companies. However, as explained above, IFRS 17 needs to be applied with reference to the requirements of other relevant standards.

IFRS 10: Consolidated Financial Statements, sets out the requirements for producing consolidated financial statements. One of the requirements of IFRS 10 is that intra-group balances are eliminated on consolidation (see paragraph B86(b) of IFRS10). For example, where there are intra-group reinsurance arrangements, the consolidated amounts for insurance contracts and reinsurance contracts are not simply the sum of these amounts in the entity financial statements. Rather the amounts presented exclude the intra-group balances such that the value of reinsurance contracts for the consolidated group are only in relation to contracts entered into with parties outside the group. Consequently, it is also necessary to be clear which entities in the group are consolidated for financial reporting purposes, as the consolidation requirements differ for wholly owned subsidiaries, different levels of participation in other businesses and joint ventures. Although these requirements are set out in IFRS 10, IFRS 17 and IAS 28, it is also important to understand how the reporting entity has implemented these requirements.

Where the consolidating group includes more than one insurer or reinsurer the valuation of groups of insurance contracts issued and reinsurance contracts held may be different in the results of the solo company compared to in the Group results. One example of this is in relation to the calculation of the risk adjustment and the CSM. Paragraph B88 permits the allowance of diversification in the calculation of the risk adjustment at the reporting entity level. This is discussed further in Chapter 4 on risk adjustment.

Further changes to the granularity of disclosures may be required, for example, in relation to segment reporting (see question 15.20 above), if the segments reported for the group and the solo entities within the group are not the same.

Interim reporting, disclosures and transition to IFRS 17

15.32. What is interim reporting and how does IFRS 17 apply to this?

An interim financial report is a financial report that contains either a complete or condensed set of financial statements for an interim period (i.e., a financial reporting period shorter than a full financial year). IAS 34 prescribes the minimum content of an interim financial report and the principles for recognition and measurement in financial statements presented for an interim period.

Paragraph B137 requires that, notwithstanding the requirements of IAS 34 that the frequency of an entity’s reporting shall not affect measurement of its annual results, an entity shall not change the treatment of accounting estimates made in previous interim financial statements.
when applying IFRS 17 in subsequent interim financial statements or in the annual reporting period. This requirement may result in different entities with different interim reporting periods reporting different results for similar transactions.

15.33. Why can an entity change its IFRS 9 classification of financial instruments the first time it implements IFRS 17?

Paragraph C29 sets out the conditions for redesignation of financial assets under IFRS 9 if the entity applied IFRS 9 to annual reporting periods before the initial application of IFRS 17.

This may be important to reporting entities as the designation of financial instruments affects whether the performance of those financial instruments is reported in profit / loss or in OCI. Considering the presentation of financial instruments and insurance contracts together under IFRS 9 and IFRS 17 respectively, can help to minimise accounting mismatches by allowing movements due to the same underlying factors (e.g., movements in financial market values and market consistent assumptions) to be presented in the same statement i.e., in profit/loss or in OCI.

If a redesignation of financial assets under IFRS 9 is made upon initial application of IFRS 17, then the entity must:

- Apply the designations and classifications retrospectively, applying the relevant transition requirements in IFRS 9 (paragraph C30);

- Either restate prior periods to reflect changes to designations and classifications or if the entity does not restate prior periods then the entity must recognise the impact of the redesignation in opening retained earnings (or other component of equity) (paragraph C31); and

- Include certain disclosures pertaining to any redesignation of financial assets (paragraphs C32-C33).

Presentation of acquisition costs and other insurance expenses

15.34. When and where are acquisition costs included in the statements of financial position and financial performance?

When insurance contracts are recognised (see Chapter 1), they are included in the statements of financial position and financial performance because the cash flows within the contract boundary may include an allocation of insurance acquisition cash flows attributable to the portfolio to which the contract belongs (B65(e)). This recognises that in order to sell insurance contracts where the sales force is not solely remunerated based on commission per contract sold, the entity will incur expenses attempting to sell some contracts that are ultimately not purchased.
If the acquisition expenses directly attributable to the portfolio were paid before initial recognition of the contract, that amount is included in the initial measurement of the portfolio of insurance contracts such that the CSM is reduced for the cost of the acquisition expenses (see Chapter 6).

If acquisition costs have been incurred prior to the financial reporting date and are associated with insurance contracts which will not be recognised until a later date, there will be no group of insurance contracts to which those expenses can be allocated. In those circumstances, the reporting entity can include an asset or liability in the statement of financial position for the value of those acquisition costs. This asset or liability for acquisition costs is derecognised when the relevant insurance contracts are recognised so there is a group of insurance contracts to which the acquisition expenses can be allocated (paragraph 27). If the contract boundary is one year or less and the PAA is used, this treatment of acquisition costs is optional and the reporting entity can choose to recognise the acquisition costs as expense or income in the statement of financial performance when they are incurred (paragraphs 27, 38(b) and 59(a)).

Assets or liabilities for acquisition costs are not shown as a separate line item in the statement of financial position but are included in the carrying amount of the related groups of insurance contracts issued or reinsurance contracts held (paragraph 79).

There are a number of specific disclosure requirements for insurance acquisition costs. In relation to the reconciliations required in paragraph 100, these are covered in paragraph 103-107. If an entity uses the PAA, it also discloses the method it has chosen to recognise insurance acquisition cash flows applying paragraph 59(a).

15.35. When and where are claims handling expenses included in the statements of financial position and financial performance?

Under the GMA, claim handling costs (i.e., the costs the entity will incur in investigating, processing and resolving claims under existing insurance contracts, including legal and loss-adjusters' fees and internal costs of investigating claims and processing claim payments) are included in the insurance contract cash flows (paragraph B65(f)) and so are recognised in the financial statements when the associated insurance contracts are recognised, if those cash flows are within the contract boundary. Consequently, claims handling expenses are included in the valuation of insurance contracts and reinsurance contracts held in the statement of financial position; are included in insurance revenue in respect of services expected to be delivered in the financial reporting period; and are included in insurance service expense in the period in which the actual costs are incurred.

Under the PAA, claims handling costs are not explicitly included in the liability for remaining coverage and therefore are recognised when the claim is incurred.

15.36. When and where are indirect expenses and overheads included in the statements of financial position and financial performance?
Indirect expenses (i.e., expenses that are not directly attributable to a portfolio of insurance contracts) and overheads are included in the valuation of insurance contracts in the statement of financial position if they are related to the fulfilment of insurance contracts that are recognised in the financial statements and if the expense cash flows are within the contract boundary. See Chapter 1 for insurance contract recognition and contract boundary.

Paragraph B65(l) sets out which types of insurance expenses may be included and restrictions on their inclusion. For example, overheads must be allocated to groups of contracts using methods that are systematic and rational. Paragraph B66(d) explicitly excludes costs that cannot be directly attributed to the portfolio (e.g., some product development and training costs). Which cash flows may be included is covered in more detail in Chapter 2.

Indirect expenses and overheads that are included in the valuation of insurance contracts are recognised in the financial statements when the associated groups of insurance contracts are recognised provided those cash flows are within the contract boundary. Consequently, indirect expenses and allocated overheads are included in the valuation of insurance contracts and reinsurance contracts held in the statement of financial position; are, under the GMA, included in insurance revenue in respect of insurance services expected to be delivered in the financial reporting period; and are included in insurance service expense in the period in which the costs are incurred.

Expenses that cannot be included in the valuation of insurance contracts are recognised in the statement of financial performance in the period in which they are incurred, unless they fall within another accounting standard which prescribed an alternative accounting treatment.

Section C - Disclosures

This section provides general comments on the disclosures required to explain the presentation such as the required reconciliations.

Overview of IFRS Disclosures

15.37. What is meant by "disclosures" in IFRS 17?

The objective of the disclosure requirements is for an entity to disclose information in the notes to the financial statements, enabling users of the financial statements to assess the effect of contracts within the scope of IFRS 17 on the entity's statement of financial position and statement(s) of financial performance and statement of cash flows. The disclosures cover information about the amounts recognised in the financial statements; significant judgement and changes in those judgements; and the nature and extent of risks from contracts in scope of IFRS 17. The disclosure requirements are set out in paragraphs 93 to 132.
15.38. What is the objective of the disclosure requirements and what might be the role of an actuary helping to produce IFRS 17 disclosures?

Paragraph 93 specifies that the objective of disclosure requirements is to give users of financial statements, together with information presented in the statement of financial position, statement of financial performance and statement of cash flows, a basis to assess the effect that contracts within the scope of IFRS 17 have on the entity's financial position, financial performance and cash flows.

Typically the finance or accounting team will have ultimate responsibility for the information contained in the financial statements, including the disclosures. The actuary's role in preparing disclosures is likely to be a supporting role to the individual or team responsible for preparing the overall financial statements. This may include:

- Preparing numerical information specific to the disclosures that is not recorded in core finance systems or which is sourced from actuarial models – for example estimates of claims development and sensitivities to insurance and market risks.
- Supporting the preparation of, or reviewing, qualitative information included in the disclosures – for example qualitative information on how the entity manages the various types of risk to which it is exposed.
- Review of other qualitative or quantitative information included in the financial statements to support the overall integrity of the disclosures and to ensure that the information included presents a fair and accurate representation of the effect of the contracts within the scope of IFRS 17 at the reporting date.

15.39. Do you need to show separate reconciliations for reinsurance contracts held?

Yes, paragraph 98 specifies that separate reconciliations shall be disclosed for insurance contracts issued and reinsurance contracts held and that the reconciliations should be adapted to reflect the features of reinsurance contracts held that differ from insurance contracts issued.

15.40. Are there any changes to the presentation or disclosure requirements when applying IFRS 17 for the first time?

Paragraphs C25 – C28 specifies exceptions to the presentation of comparative information when applying IFRS 17 for the first time. These are summarised below.

- Comparative information for periods earlier than the beginning of the annual reporting period immediately preceding the date of initial application may be included but is not required.
- Disclosures specified in paragraphs 93 – 132 are not required for comparative periods before the beginning of the annual reporting period immediately preceding the date of initial application.
• If unadjusted comparative information and disclosures are presented for earlier periods, it must be disclosed that the information has not been adjusted and explain the basis on which it has been prepared.

• Previously unpublished information about claims development that occurred earlier than five years prior to transition to IFRS 17 need not be disclosed. However, if an entity does not disclose that information, it shall disclose that fact.

If an entity redesignates financial assets under IFRS 9 in accordance with paragraph C29 then additional disclosures must be made in accordance with paragraphs C32 and C33.
Appendix - How does presentation and disclosures differ in IFRS 17 compared with the previous standard for insurance contracts IFRS 4?

The answer here is intended to give an overview of the key differences. The details of the changes in IFRS 17 are considered in more detail in other questions in this chapter.

Under IFRS 4, presentation of insurance contracts in the financial statements in each jurisdiction could vary as IFRS 4 permitted the grandfathering of previous accounting policies based on the local GAAP basis applying before IFRS 4 was implemented. Entities reporting under IFRS 4 also had to apply the principles set out in IAS 1. The presentation of insurance contracts in the statement of financial position under IFRS 17 might be broadly similar to the typical way in which the balance sheet is presented under IFRS 4. However, the values presented may be significantly different. This difference arises because the measurement basis for contracts within the scope of IFRS 17 is based on expected future cash flows rather than the deferral and matching approach used by many insurers reporting under IFRS 4. One of the impacts of this change is that some amounts previously included under amounts payable and amount receivable, such as balances with brokers and reinsurers, may now be included in the valuation of insurance contracts and reinsurance contracts held. Further, these valuations may also be adjusted for future cash flows to be received or to be paid, not currently included in the valuation of insurance contracts and ceded reinsurance under IFRS 4.

The cash flow basis in IFRS 17 may result in a significant change to the value of individual items presented in the statement of financial position. Impacts include changes to the measurement basis between IFRS 4 and IFRS 17, notably the introduction of, or changes to, the discounting basis (see Chapter 3), the basis for setting the risk margin (see Chapter 4), and the introduction of the CSM (see Chapter 6).

Under IFRS 17, it will be necessary to present and disclose separately the investment component of insurance contracts that is excluded from revenue and expenses. Paragraph 84-85, being read with reference to paragraph 13, requires that insurance revenue and insurance service expenses exclude receipt and payment of investment components. Paragraphs 103(c) and 117(c)(iv) requires separate disclosures for investment components excluded from insurance revenue and insurance service expenses.

The presentation of financial performance for insurance contracts is likely to be significantly different under IFRS 17 compared with IFRS 4. IFRS 17 introduces a new definition of revenue, which does not necessarily reconcile to actual premium income over the reporting period. IFRS 17 also sets out a new basis for calculating profit or loss. The presentation of financial performance separates the profit and loss arising from the insurance service from insurance finance income and expense, which includes the effect of allowing for time value of money. The extent of the changes to the presentation of financial performance may make it relatively difficult to make comparisons between the income and expenses presented under IFRS 17 with equivalent amounts presented on an IFRS 4 basis except where the PAA is used under IFRS 17.

For contracts where PAA is used, the presentation is likely to have greater similarity to the
presentation under IFRS 4. This will particularly be the case if the IFRS 4 reporting basis was based on earned premiums and claims reserves i.e., as is/was common for many non-life contracts under IFRS4.

The objectives of the disclosure requirements in IFRS 17 are broadly similar to those in IFRS 4. However, because the measurement basis in IFRS 17 is significantly different to the measurement basis used by insurers reporting under IFRS 4, there are requirements for many new reconciliations to explain the amounts presented in the financial statements (see paragraphs 97-117). To meet the overarching objective for disclosures under IFRS 17, risk metrics used in the disclosure on the nature and extent of risks (paragraphs 121-132) need to be consistent with the IFRS 17 measurement basis.
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Preface

This International Standard of Actuarial Practice (ISAP) is a model for actuarial standard-setting 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 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.

This ISAP was adopted by the IAA Council in November 2012. The reformatted version (to accommodate the separate Glossary) was adopted in October 2013. The conforming version was adopted in April 2017.

[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 actuaries when performing actuarial services to give intended users 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, models and modelling techniques) used are disclosed appropriately.

1.2. **Scope**

1.2.1. This ISAP is a general standard. It applies to all actuarial services performed by an actuary unless an element of guidance is explicitly superseded by another standard such as a practice-specific standard or by law.

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 actuary should . . .”, followed by a description of the exception.

1.3. **Compliance** – An actuary may fail to follow the guidance of this ISAP but still comply with it where the actuary:

1.3.1. Complies with requirements of law that conflict with this ISAP;

1.3.2. Complies with requirements of the actuarial code of professional conduct applicable to the work that conflict with this ISAP; or

1.3.3. Departs from the guidance in this ISAP and provides, in any report, an appropriate statement with respect to the nature, rationale, and effect of any such departure.

1.4. **Applicability** – This ISAP applies to actuaries when performing actuarial services. An actuary who is performing these actuarial services may be acting in one of several capacities such as an employee, management, director, external adviser, auditor, or supervisory authority of the entity.

1.4.1. The application of this ISAP is clear when a single consulting actuary is performing actuarial services for a client who is not affiliated with the actuary.

1.4.2. There are at least two general cases which do not meet the criterion stated in 1.4.1:

a. A team of actuaries is performing actuarial services; or
b. An actuary is performing actuarial services for an affiliated party (such as the actuary’s employer or affiliated entities within a group under common control).

1.4.3. When a team is performing actuarial services, most paragraphs of this ISAP apply to every actuary on the team. However, requirements in some paragraphs need not be met by every actuary on the team personally (e.g., 2.1.1). In the case of such paragraphs, each actuary on the team should identify, if relevant to that actuary’s work, which member of the team is responsible for complying with such requirements and be satisfied that the other team member accepts that responsibility.

1.4.4. If an actuary is performing actuarial services for an affiliated party the actuary should interpret this 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 this ISAP, the actuary should endeavour to observe the spirit and intent of this ISAP as fully as possible.

a. The actuary should consider the expectations of the principal. These expectations might suggest that it may be appropriate to omit some of the otherwise required content in the report. However, limiting the content of a report may not be appropriate if that report or the findings in that report may receive broad distribution.

b. If the actuary believes circumstances are such that including certain content in the report is not necessary or appropriate, the actuary should be prepared (if challenged by a professional actuarial body with jurisdiction over the actuarial services) to describe these circumstances and provide the rationale for limiting the content of the report.

1.5. Reasonable Judgment – The actuary should exercise reasonable judgment in applying this 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 this 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 intended users would be expected to obtain from the work.

1.5.3. Any judgment required by the ISAP (including implicit judgment) is intended to be the actuary’s professional judgment 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 actuary. In particular, the following verbs are to be understood to convey the actions or reactions indicated:

a. “Must” means that the indicated action is mandatory and failure to follow the indicated action will constitute a departure from this ISAP.

b. “Should” (or “shall”) means that, under normal circumstances, the actuary is expected to follow the indicated action, unless to do so would produce a result that would be inappropriate or would potentially mislead the intended users of the actuarial services. If the indicated action is not followed, the actuary should disclose that fact and provide the reason for not following the indicated action.

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.

1.6.2. 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 also a hyperlink to the definition (e.g., actuary).

1.7. 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 adoption date as shown on the cover page of this ISAP. The referenced document may be amended, restated, revoked, or replaced after the adoption date. In such a case, the actuary should consider the extent the modification is applicable and appropriate to the guidance in this ISAP.

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 actuarial services, the actuary should confirm with the principal the nature and scope of actuarial services to be provided, including:

a. The role of the principal;

b. Any limitations or constraints on the actuary;

c. Any requirements that the actuary 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 actuary, especially if it is sensitive or confidential.

2.1.2. In accepting an assignment for actuarial services, the actuary 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 services;

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 actuary to communicate information, as may be necessary for the work.

2.2. Knowledge of Relevant Circumstances – The actuary should have or obtain sufficient knowledge and understanding of the data and information available, including the relevant history, processes, nature of the business operations, law, and business environment of the entity, to be appropriately prepared to perform the actuarial services required by the assignment.

2.3. Reliance on Others – The actuary may use information prepared by another party such as data, relevant contracts, insurance contract or pension plan provisions, opinions of other professionals, projections, and supporting analyses (but excluding assumptions or methodology). The actuary may select the party and information on which to rely, or may be

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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 { }.
given the information by the principal. The actuary may take responsibility for such information, or the actuary may state that reliance has been placed upon the source of this information and disclaim responsibility.

2.3.1. If the actuary selects the party on whom to rely, the actuary 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 actuary and the other party regarding any facts known to the actuary 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 actuary uses information prepared by another party without disclaiming responsibility for that information, the actuary:

a. Should determine that the use of that information conforms to accepted actuarial practice in the jurisdiction(s) of the actuary’s services;

b. Should establish appropriate procedures for the management and review of the information that the actuary intends to use; and

c. Does not need to disclose the source of the information.

2.3.3. If the actuary states reliance on the information prepared by another party and disclaims responsibility for it, the actuary should:

a. Disclose that fact (including identifying the other party) in any report or other appropriate communication;

b. Disclose 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. Report the steps, if any, that the actuary 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 actuary should consider any differences in the law or accepted actuarial practice between the two jurisdictions and how that might affect the actuary’s use of the information.
2.4. **Materiality** – In case of omissions, understatements, or overstatements, the actuary should assess whether or not the effect is material. The threshold of materiality under which the work is being conducted should be determined by the actuary unless it is imposed by another party such as an auditor or the principal. When determining the threshold of materiality, the actuary should:

2.4.1. Assess materiality from the point of view of the intended user(s), recognizing the purpose of the actuarial services; thus, an omission, understatement, or overstatement is material if the actuary expects it to affect significantly either the intended user’s decision-making or the intended user’s reasonable expectations;

2.4.2. Consider the actuarial services and the entity that is the subject of those actuarial services; and

2.4.3. Consult with the principal if necessary.

2.5. **Data Quality**

2.5.1. **Sufficient and Reliable Data** - The actuary should consider whether sufficient and reliable data are available to perform the actuarial services. Data are sufficient if they include the appropriate information for the work. Data are reliable if that information is materially accurate.

2.5.2. **Validation** - The actuary should take reasonable steps to review the consistency, completeness, and accuracy of the data used. These might include:

   a. Undertaking reconciliations against audited financial statements, trial balances, or other relevant records, if these are available;

   b. Testing the data for reasonableness against external or independent data;

   c. Testing the data for internal consistency; and

   d. Comparing the data to that for a prior period or periods.

The actuary should describe this review in the report.

2.5.3. **Sources of Data for Entity-Specific Assumptions** - To the extent possible and appropriate when setting entity-specific assumptions, the actuary should consider using data specific to the entity for which the assumptions are being made. Where such data are not available, relevant, or credible, the actuary should consider industry data, data from other comparable sources, population data, or other published data, adjusted as appropriate. The data used, and the adjustments made, should be described in the report.

2.5.4. **Data Deficiencies** - The actuary should consider the possible effect of any data deficiencies (such as inadequacy, inconsistency, incompleteness, inaccuracy, and unreasonableness) on the results of the work. If such deficiencies in the data are not likely to materially affect the results, then the deficiencies need not be considered.
If the actuary cannot find a satisfactory way to resolve the deficiencies, then the actuary should consider whether to:

a. Decline to undertake or continue to perform the actuarial services;

b. Work with the principal to modify the actuarial services or obtain appropriate additional data; or

c. Subject to compliance with the actuary’s code of professional conduct, perform the actuarial services as well as possible and disclose the data deficiencies in the report (including an indication of the potential impact of those data deficiencies).

2.6. Assumptions and Methodology

2.6.1. The assumptions and methodology may be

a. Set by the actuary (2.7);

b. Prescribed by the principal or another party (2.8); or

c. Mandated by law (2.9).

2.6.2. Where the report is silent about who set an assumption or methodology, the actuary who authored the report will be assumed to have taken responsibility for such assumption or methodology.

2.7. Assumptions and Methodology Set by Actuary – Where the actuary sets the assumptions and methodology, or the principal or another party sets an assumption or methodology that the actuary is willing to support:

2.7.1. Selection of Assumptions and Methodology - The actuary should select the assumptions and methodology that are appropriate for the work. The actuary should consider the needs of the intended users and the purpose of the actuarial services. In selecting assumptions and methodology, the actuary should consider the circumstances of the entity and the assignment, as well as relevant industry and professional practices. The actuary should consider to what extent it is appropriate to adjust assumptions or methodology to compensate for known deficiencies in the available data.

2.7.2. Appropriateness of Assumptions - The actuary should consider the appropriateness of the assumptions underlying each component of the methodology used. Assumptions generally involve significant professional judgment 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 data or projecting future trends. The actuary should consider to what extent it is appropriate to use assumptions that have a known significant bias to underestimation or overestimation of the result.
2.7.3. **Margins for Adverse Deviations** - In cases where unbiased calculations are not required, the *actuary* 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 data, assumptions, or methodology. The *actuary* should disclose any incorporation of margins for adverse deviations in assumptions or methodology.

2.7.4. **Discontinuities** - The *actuary* should consider the effect of any discontinuities in experience on assumptions or methodology. Discontinuities could result from:

a. Internal circumstances regarding the *entity* such as changes in an insurer’s claims processing or changes in the mix of business; or

b. External circumstances impacting the *entity* such as changes in the legal, economic, legislative, regulatory, supervisory, demographic, technological, and social environments.

2.7.5. **Individual Assumptions and Aggregate Assumptions** - The *actuary* 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 *actuary* should make appropriate adjustments to achieve a reasonable assumption set and final result.

2.7.6. **Internal Consistency of Assumptions** - The *actuary* should determine if the assumptions used for different components of the *work* are materially consistent, and that any significant interdependencies are modelled appropriately. The *actuary* should disclose any material inconsistency in the *report*.

2.7.7. **Alternative Assumptions and Sensitivity Testing** - The *actuary* should consider and address the sensitivity of the methodology to the effect of variations in key assumptions, when appropriate. In determining whether sensitivity has been appropriately addressed, the *actuary* should take into account the purpose of the *actuarial services* 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

– Where the assumptions or methodology are prescribed by the *principal* or another party:

2.8.1. If the *actuary* is willing to support the prescribed assumption or methodology (following paragraph 2.7 as applicable), the *actuary* may disclose the party who prescribed the assumption or methodology and the *actuary*’s support.

2.8.2. If the *actuary* 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*, the *actuary* should disclose in the *report* that fact, the party who prescribed the assumption or methodology, and the reason why this party, rather than the *actuary*, set the assumption or methodology; or
b. The actuary 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 actuary was not qualified to judge the appropriateness of the assumption, the actuary should disclose in the report that fact, the party who prescribed the assumption or methodology, and the reason why this party, rather than the actuary, set the assumption or methodology.

2.8.3. When the principal requests an additional calculation using an assumption set which the actuary does not judge to be reasonable for the purpose of the actuarial services, the actuary may provide the principal with the results based on such assumptions. If those results are communicated to any party other than the principal, the actuary should disclose the source of those assumptions and the actuary’s opinion 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 the report that the assumption or methodology was mandated by law and that the report should not be used for other purposes where the assumptions and methodology used are not appropriate (unless appropriately adjusted).

2.10. Process Management

2.10.1. Process Controls - The actuary should consider to what extent, if any, the procedures used to carry out the work should be controlled, and if so, how.

2.10.2. Reasonableness Checks - The actuary should review the results produced by the selected assumptions and methodology for overall reasonableness.

2.11. Peer Review – The actuary should consider to what extent, if at all, it is appropriate for the report to be independently reviewed, in totality or by component, before the final report is delivered to the principal or distributed to the intended users. The purpose of peer review is to ensure the quality of the report, with the process tailored to the complexity of the work and the specific environment in which the actuary works. If a peer review is deemed to be appropriate:

2.11.1. The actuary 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 actuarial services.

2.11.2. If the reviewer is an actuary, the reviewer should comply with the guidance of this ISAP, as applicable, in performing the review.

2.12. Treatment of Subsequent Events – The actuary should consider any subsequent event that has the potential of materially changing the results of the actuarial services if the event had been reflected in the work and disclose such an event in the actuary’s communication.

2.13. Retention of Documentation

2.13.1. The actuary should retain, for a reasonable period of time, sufficient documentation for purposes such as:
a. Peer review, regulatory review, and audit;

b. Compliance with law; and

c. Assumption of any recurring assignment by another actuary.

2.13.2. Documentation is sufficient when it contains enough detail for another actuary qualified in the same practice area to understand the work and assess the judgments made.

2.13.3. Nothing in this 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 communication should be appropriate to the particular circumstances and take the skills, understanding, levels of relevant technical expertise, and needs of the intended user into consideration to allow the intended user to understand the implications of the actuary’s communication.

3.1.1. Form and Content - The actuary should determine the form, structure, style, level of detail, and content of each communication to be appropriate to the particular circumstances, taking into account the intended users.

3.1.2. Clarity - The actuary should word each communication to be clear and use language appropriate to the particular circumstances, taking into account the intended users.

3.1.3. Timing of Communication - The actuary should issue each communication within a reasonable time period. The timing of the communication should reflect any arrangements that have been made with the principal. The actuary should consider the needs of the intended users in setting the timing.

3.1.4. Identification of the Actuary - A communication shall clearly identify the issuing actuary. When two or more individuals jointly issue a communication, at least some of which is actuarial in nature, the communication shall identify all responsible actuaries, unless the actuaries judge it inappropriate to do so. The name of an organization with which each actuary is affiliated also may be included in the communication, but the actuary’s responsibilities are not affected by such identification. Unless the actuary judges it inappropriate, any communication shall also indicate to what extent and how supplementary information and explanation can be obtained from the actuary or another party.

3.2. Report – The actuary should complete a report unless any intended users will otherwise be adequately informed about the results of actuarial services (including access to the supporting information which is necessary to understand these results). The actuary should present all information with sufficient detail that another actuary qualified in the same practice area could make an objective appraisal of the reasonableness of the actuary’s work.

3.2.1. Content - In the report, the actuary should include, if applicable:

a. The scope and intended use of the report;

b. The results of actuarial services, including the potential variability of these results;

c. The methodology, assumptions, and data used;

d. Any restrictions on distribution;

e. The date of the report; and

f. Information on the authorship of the report.

3.2.2. Disclosures - In the report, the actuary issuing the report should disclose, if applicable:
a. Any material deviation from the guidance in this ISAP (1.3);
b. Any reliance on information prepared by another party for which the actuary disclaims responsibility (2.3.3);
c. Any data modification, validation and deficiencies (2.5);
d. The actuary’s assessment of the uncertainty inherent in the information used by the actuary (2.5.4.c);
e. Any material inconsistency in the assumptions used (2.7.6);
f. Where the report contains the results of an additional calculation using an assumption set requested by the principal which the actuary does not judge to be reasonable for the purpose of the assignment (2.8.3);
g. Assumptions and methodology that have been prescribed by another party (2.8);
h. Assumptions and methodology that are mandated by law (2.9); and
i. Any material subsequent event (2.12).

3.2.3. **Authorship** - The actuary issuing the report should include in the report:

a. The actuary’s name;
b. If applicable, the name of the organization on whose behalf the actuary is issuing the report, and the actuary’s position held;
c. The capacity in which the actuary serves;
d. The actuary’s qualifications;
e. The code of professional conduct and actuarial standards under which the work was performed, if there is any possible ambiguity; and
f. If applicable, attestations and relocations.

3.2.4. **Form** - A report may comprise one or several document(s) that may exist in several different formats. Where a report comprises multiple documents, the actuary should communicate to all intended users which documents comprise the report. The actuary should ensure that report components (especially those in electronic media) are such that they can be reliably reproduced for a reasonable period of time.

3.2.5. **Constraints** - The content of a report may be constrained by circumstances such as legal, legislative, regulatory, or supervisory proceedings. Constraints could also include other standards such as financial reporting standards or an entity’s accounting policy. The actuary should follow the guidance of this ISAP to the extent reasonably possible within such constraints.
ISAP 4
International Standard of Actuarial Practice 4
IFRS 17 Insurance Contracts

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 standard-setting 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.

Local jurisdictions may adopt variants of IFRS 17, 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 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”.

This ISAP is a model standard of actuarial practice and, as such, is not binding on any actuary.

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 ISAP 1 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 ISAP 1, rather than referring to ISAP 1 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 law and code of 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 actuaries when performing actuarial services in connection with International Financial Reporting Standard 17 Insurance Contracts (IFRS 17) issued in May 2017.

IFRS 17 Insurance Contracts establishes principles for the recognition, measurement, presentation and disclosure of insurance contracts and reinsurance contracts. The objective is to ensure that entities provide relevant information in a way that faithfully represents those contracts.

An entity which reports financial statements under IFRS 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 IFRS financial statements.

Nevertheless, actuaries providing actuarial services in connection with IFRS 17 may be advising the entity 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 actuarial services provided in connection with IFRS 17; and
- Demonstrate the IAA’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 IAA and the IASB.
Section 1. General

1.1. **Purpose** – This ISAP provides guidance to actuaries when performing actuarial services in connection with IFRS 17. Its purpose is to increase intended users’ 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 models and modelling techniques) used are disclosed appropriately.

1.2. **Scope** – This ISAP applies to actuaries when performing actuarial services related to IFRS 17 for the preparation of an entity’s actual or pro-forma IFRS financial statements. Actuaries performing other actuarial services in connection with IFRS 17 (for example: an actuary 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 ISAP 1 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., actuary).

This ISAP also uses key terms from IFRS 17, in which case they have the meaning as used in IFRS 17. These terms are highlighted in the text with a double underscore and in green (e.g., insurance contract).

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 actuary 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 on or after [Date].

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1 [Phrase to be selected and date to be inserted by standard-setter adopting or endorsing this ISAP.]
2.1. Relevant Knowledge Requirements – In applying ISAP 1 paragraph 2.2, the actuary should have or obtain sufficient knowledge and understanding of information necessary to perform the assignment, such as:

a. IFRS 17, applicable sections of other relevant IFRSs (e.g., IFRS 13 when measuring Fair Value), the entity’s accounting policies and the relevant processes that are applied in the preparation of IFRS financial statements;

b. The business environment in which the entity operates, including the financial market(s) from which it obtains data;

c. The entity’s appetite for risks that have an impact on the measurement under IFRS 17;

d. The entity’s products and operations;

e. The methodologies and assumptions used by the entity in other relevant contexts and the rationale for any differences;

f. How law affects the application of IFRS 17; and

g. The relevant auditing standards.

2.2. Materiality – The actuary should understand the distinction between materiality with respect to the actuarial services, the preparation of IFRS financial statements and the auditing of those financial statements.

2.2.1. When appropriate for the work, the actuary should seek guidance from the principal or the entity regarding materiality.

2.2.2. In applying ISAP 1 paragraph 2.4, with respect to the preparation of IFRS financial statements the actuary’s threshold of materiality with respect to the actuarial services should not be greater than the entity’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 actuarial services carried out in accordance with this ISAP.

2.3. Proportionality – In applying ISAP 1 paragraph 1.5, 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 actuary should be proportionate to their possible impact on the results of the actuarial services.

2.4. Identification, Combination, Aggregation, Separation, Recognition, Derecognition and Modification – The actuary should treat the processes of:

a. Identification of insurance contracts;

b. Combination of insurance contracts;

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 insurance contract for treatment under a different standard;

e. Separation of components of an insurance contract for different treatment under IFRS 17 (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 ISAP 1 paragraph 2.7.5 or 2.8.6.

The actuary should disclose in the report changes in the above processes, including the rationale for and impact of the changes.

2.5. Measurement Approach – The actuary should treat the processes of selecting the appropriate measurement approach to be applied to each group of insurance contracts, whether it is the general measurement approach, the premium allocation approach (PAA) or the variable fee approach, as being subject to ISAP 1 paragraph 2.7.5 or 2.8.6.

The actuary should disclose in the report changes in the above processes, including the rationale for and impact of the changes.

2.6. The General Measurement Approach

2.6.1. General Approach for Selection of Assumptions – In applying ISAP 1 paragraph 2.7.5, when advising the principal or the entity on actuarial assumptions, the actuary 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 insurance contracts that is used for measurement purposes;

b. Whether assumptions developed in other contexts, for example pricing assumptions, may be inappropriate for IFRS 17 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 data 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 law, economic, demographic, technological and social).

2.6.2. Process for Updating Assumptions – If the actuary considers it appropriate to change the process, including the methodology, used to update a recommended assumption,
the actuary should discuss the change with the principal, including whether it would constitute a change in accounting policy 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 actuary should disclose in the report changes in such processes, including the rationale for and impact of the changes.

2.6.3. Insurance Risk – When advising the principal or the entity on assumptions to measure insurance risk, the actuary should consider factors including the following:
   a. Characteristics of the insurance contract 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 entity, such as underwriting procedures and claims management.

2.6.4. Policyholder Options – When advising the principal or the entity on assumptions for the exercise of options by policyholders, the actuary 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 anti-selection, the effects of non-financial considerations, and the relative advantages to the policyholder of exercising any options;
   c. Characteristics of how the insurance contracts 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. Entity Discretion – When advising the principal or the entity on assumptions which consider the exercise of discretion by the entity, the actuary should take into account expectations or limitations that may arise from sources such as:
   a. The entity's marketing and promotional materials;
   b. The entity’s past practices;
   c. The entity’s current policy;
   d. Market practices; and
   e. Laws and rulings of relevant authorities.

2.6.6. Reinsurance Contracts Held – When advising the principal or the entity, on the measurement of reinsurance contracts held, the actuary should:
   a. When estimating amounts recoverable under multiple reinsurance arrangements, consider the order in which the reinsurance contracts apply;
   b. When estimating non-recoverable amounts:
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 reinsurance contracts, allow for the uncertainty caused by the potential of non-performance by reinsurers;

c. When estimating fulfilment cash flows, 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 reinsurance contracts following claims.

2.6.7. Reinsurance Contracts Issued – When advising the principal or the entity, on the measurement of reinsurance contracts issued, the actuary should consider circumstances such as:

a. The expected behaviour with respect to the available options of the policyholders, the issuer of the underlying insurance contracts 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 reinsurance contracts following claims; and

d. Default by the issuer of the underlying insurance contracts and all intermediate reinsurers.

2.6.8. Currency Exchange – When advising the principal or the entity on the estimation of the fulfilment cash flows in multiple currencies, the actuary should reflect current market expectations of future currency exchange rates.

2.6.9. Discount Rates – When advising the principal or the entity on the derivation of:

a. Discount rates for periods beyond those for which observable data from an active market are available, the actuary 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 insurance contracts, that vary with the returns of the entity’s invested assets, the actuary should consider the entity’s investment policy, as applied in practice, taking into account the entity’s communications to various stakeholders and, where applicable, anticipated policyholder behaviour;

c. Illiquidity and credit or default adjustments for determining the discount rates, the actuary 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. **Contracts with Cash Flows that Vary with Returns on Underlying Items** - When advising the principal or the entity on contracts whose cash flows vary with returns on underlying items, the actuary should:

a. Select discount rates used to calculate the present value of the cash flows to measure the fulfillment cash flows 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 risk adjustment for non-financial risk and the discount rates in the projection.

2.6.11. **Maintenance Expenses** – When advising the principal or the entity on the estimation of cash flows for maintenance expenses such as policy administration and claim handling costs, and attributable overheads, the actuary should consider factors such as:

a. The entity’s cost-accounting and expense allocation policies;

b. Expenses expected to arise from fulfilling insurance obligations existing on the measurement date. This estimate should consider factors such as the entity’s past experience and current business plans, and the impact of future inflation; and

c. Terms of any outsourcing arrangements.

2.6.12. **Insurance Acquisition Cash Flows** – The actuary should be satisfied that the allocation of insurance acquisition cash flows to each portfolio of insurance contracts is made on a consistent basis.

2.6.13. **Risk Adjustment for Non-Financial Risk** – When advising the principal or the entity on the risk adjustment for non-financial risk, the actuary should:

a. Understand the non-financial risk inherent in the insurance contracts;

b. In assessing what the entity requires as compensation for bearing the non-financial risk:

   i. Reflect the diversification benefit that the entity recognizes at the relevant level of consolidation; and

   ii. Consider sources of relevant information, such as the entity’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 portfolios of insurance contracts; 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);
e. Consider whether the difference between the total of the calculated gross risk adjustment for non-financial risk and the total of the ceded risk adjustment for non-financial risk fairly reflects the compensation that the entity requires for bearing the uncertainty of its net exposure; and

f. When advising on the confidence level disclosure required by IFRS 17, where risk adjustment for non-financial risk has not been determined using a confidence level approach, consider:

i. The ability to diversify non-financial risk over the entity’s consolidated business; and

ii. The inherent uncertainty in the translation to a confidence level and the need to describe such uncertainty in the report.

2.6.14. Aggregation and Contractual Service Margin (CSM) – The actuary should treat the processes of:

a. Identification of portfolios of insurance contracts;

b. Allocation of individual insurance contracts into portfolios of insurance contracts, and division of each portfolio of insurance contracts into groups of insurance contracts;

c. Treatment of the loss component on onerous contracts;

d. Determination of the coverage units; and

e. Roll forward of the CSM as being subject to ISAP 1 paragraph 2.7.5 or 2.8.6.

The actuary should disclose in the report changes in the above processes, including the rationale for and impact of the changes.

2.7. The Premium Allocation Approach (PAA) – When advising the principal or the entity in relation to the use of the PAA for a group of insurance contracts, the actuary should:

2.7.1. At initial recognition if the coverage period is longer than one year, consider:

a. Differences between the expected patterns of insurance revenue under the general measurement approach and under the PAA;

b. Differences between the expected timing of cash flows under the general measurement approach and the insurance revenue under the PAA, resulting in different adjustments for the time value of money; and

c. Whether future assumption changes under the general measurement approach would render the simplification invalid when assessing whether material differences between the respective carrying amounts of the liabilities for remaining coverage under the PAA and the general measurement approach are reasonably expected to arise;

2.7.2. Assess whether insurance contracts in the group have a significant financing component, advise the principal or the entity, and measure the liability accordingly;

2.7.3. Be aware of whether the entity has chosen in accordance with IFRS 17 to recognize insurance acquisition cash flows as expenses when it incurs those costs and determine the liability in accordance with the entity’s choice;
2.7.4. Be aware of whether the **entity** 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 **entity**’s choice; and

2.7.5. Consider whether facts and circumstances indicate that the **group of insurance contracts** is or has become **onerous** and advise the **principal** or the **entity** accordingly.

2.8. **The Variable Fee Approach** – In using the **variable fee approach**, the **actuary** should apply the guidance in paragraph 2.6., except for 2.6.6. (**Reinsurance Contracts Held**) and 2.6.7. (**Reinsurance Contracts Issued**), as the **variable fee approach** does not apply to reinsurance.

2.9. **Financial Statement Presentation and Disclosure**

2.9.1. Where the information provided by the **actuary** will be used in financial statement presentation and disclosure:

   a. The **actuary** should provide the related information needed to comply with the relevant presentation and disclosure requirements of **IFRS 17** and the **entity**’s **accounting policies**; and

   b. If the **actuary** becomes aware that such information is used in the presentations and/or disclosures incorrectly or inappropriately, the **actuary** should discuss and report these issues to the **principal**.

2.9.2. In providing advice on the disclosures of reconciliations where the order of calculations alters the information disclosed, the **actuary** 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 **report**.

2.10. **Transition** – When advising the **principal** or the **entity** on whether a full retrospective application of **IFRS 17** at transition is impracticable, the **actuary** should take into consideration factors such as:

   a. The availability and integrity of the past **data** that are required to determine the **fulfilment cash flows**;

   b. The availability and integrity of information on past products;

   c. The availability, without the benefit of hindsight, of sufficient **data** to determine the initial assumptions and subsequent changes that the **entity** would have adopted over the lifetime of the **insurance contracts**;

   d. The method that would have been used to adjust past known interest rates to achieve the rates that reflect the characteristics of the **insurance contracts**; and

   e. The difficulty, without the benefit of hindsight, in evaluating the past **risk adjustment for non-financial risk** and the **entity**’s use of discretion.
Section 3. Communication

3.1. **Disclosures** – In addition to complying with ISAP 1 Section 3. Communication, the actuary should disclose in the report:

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 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 risk adjustment for non-financial risk has not been determined using a confidence level approach, the uncertainty inherent in the translation to a confidence level (2.6.13.f.).
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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Association Actuarial Internationale
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This International Standard of Actuarial Practice (ISAP) is a model for actuarial standard-setting 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.

ISAP 5 was adopted by the IAA Council in November 2016. This conforming version was adopted on 1 December 2018.

[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 ISAP 1 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 ISAP 1, rather than referring to ISAP 1 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 law and code of 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 actuaries when performing actuarial services involving the use of enterprise risk models for insurers.

Actuaries play a principal role in assuring financial soundness of insurers, and their approach often includes the use of enterprise risk models. Specifically, the central importance of enterprise risk models 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 enterprise risk models. As employees or advisors, actuaries play an important role in advising insurers and others on the development or selection of the appropriate models 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 enterprise risk models within and across jurisdictions;
- Increase public confidence in actuarial services for enterprise risk management (ERM) purposes; and
- Demonstrate the IAA’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 actuaries when performing actuarial services involving enterprise risk models for insurers. It is expected to help increase public confidence in the ERM work provided by actuaries by giving intended users 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, models and modelling techniques) used are disclosed appropriately.

1.2. Scope – This standard applies to actuaries when performing actuarial services involving the selection, modification, development, and use of enterprise risk models, including stress tests and scenario tests, to assess solvency, assess capital adequacy, and produce risk metrics for ERM programs of insurers.

1.3. Relationship to ISAP 1 – Compliance with ISAP 1 is a prerequisite to compliance with this ISAP. References in ISAP 1 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., actuary).

1.5. Effective Date – This ISAP is effective for {actuarial services performed/actuarial services commenced/actuarial services performed for a valuation date} 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 actuary should have, or obtain, sufficient understanding of the nature of risk and uncertainty in relation to the subject of the work. In performing services related to risk assessment, the actuary 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 actuary’s professional judgment, a significant inconsistency exists, then that inconsistency should be reflected in the risk assessment and disclosed.

2.2. Proportionality – In applying ISAP 1 paragraph 1.5. Reasonable Judgment, and in particular paragraph 1.5.2., the actuary 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 actuary’s assumptions should normally reflect the actual situation as of the valuation date, modified for any known or expected future changes.

2.3.2. When constructing or advising on the construction of insurer enterprise risk models, the actuary 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 law; and
2.3.3. When probability distributions are incorporated into a model, the actuary 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 actuary should provide an explanation of the differences between the incidence of actual extreme events included in the historical data and the potential incidence of extreme events in the enterprise risk model. 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 stress test or the scenario test, including the actions assumed to be taken by management; and

b. Any known limitations of the stress test or the scenario test and include an assessment of the potential impact of these limitations on results.

2.5. Assessing Consistency Among Models – Multiple models and multiple stress tests or scenario tests 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 actuary should assess the reasons for and the impact of using multiple models and multiple stress tests or scenario tests and provide an explanation of any material differences in results.
Section 3. Communication

3.1. Disclosures – In addition to complying with ISAP 1 Section 3. Communication, the actuary 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 data and potential extreme adverse values in the risk model (2.3.3.);

3.1.3. An explanation of the differences between the experience data and the incidence of multiple extreme events in the enterprise risk model (2.3.3.);

3.1.4. The significant assumptions used in the stress test or scenario test, including the actions assumed to be taken by management (2.4.1.a.);

3.1.5. Any known limitations of the stress tests or scenario tests 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 models and multiple stress tests and scenario tests are used by the insurer (2.5.).
ISAP 6
International Standard of Actuarial Practice 6

Enterprise Risk Management Programs and
IAIS Insurance Core Principles

Adopted by the IAA Council
1 December 2018
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1. Replace “ISAP” throughout the document with the local standard name, if applicable;
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3. Modify the reference to ISAP 5 in the Introduction, if appropriate;
4. Choose the appropriate phrase and date in paragraph 1.6.;
5. Modify the references to regulations consistent with ICP 8 and ICP 16, if appropriate;]
6. Review this standard for, and resolve, any conflicts with the local law and code of 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 actuaries who provide actuarial services 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 actuaries perform actuarial services 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, actuaries are called upon to give a professional opinion regarding the ERM program to the supervisor.

This ISAP addresses ERM programs that often involve stress testing, scenario testing and other modeling techniques. ISAP 5 (Insurer Enterprise Risk Models) provides helpful guidance on these subjects and actuaries reading this ISAP may find ISAP 5 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 actuarial services for ERM purposes; and
• Demonstrate the IAA’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 actuaries when performing actuarial services 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 work provided by actuaries by giving intended users 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 used are disclosed appropriately.

1.2. **Scope** – This ISAP applies to actuaries when performing actuarial services 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 actuary only to the extent of the actuary’s responsibility and involvement.

1.3. **Relationship to ISAP 1** – Compliance with ISAP 1 is a prerequisite to compliance with this ISAP. References in ISAP 1 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., actuary).

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 adoption date as shown on the cover page of this ISAP. The referenced document may be amended, restated, revoked, or replaced after the adoption date. In such a case, the actuary 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 actuary 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 ISAP 1 paragraph 1.5.2., the actuary 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 actuary 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 actuary 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 models 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 actuary 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 models 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;
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 actuary 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 actuary 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;

l. 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 actuary 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, stress testing, reverse stress testing and scenario testing 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 actuary 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, stress testing, reverse stress testing and scenario testing; 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 ISAP 1 Section 3. Communication the actuary should disclose, as applicable to the actuarial services 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.).
Deriving Value from ORSA
Board Perspective

April 2015
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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 and the regulatory and rating agency capital that will be required, before 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.
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.
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. Since these types of guarantees and benefits tend not to be a feature of general insurance 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.
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

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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 stand-alone 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?

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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 AF 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.
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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.

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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.

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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 ways:

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)

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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.
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” 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.

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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.

This paper has been produced and approved by the Insurance Regulation Committee of the IAA on 8 March 2016
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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 agents 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.

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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.

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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

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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 underwriting\(^2\) 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 interest\(^3\) or mis-selling 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 non-continuation behaviour counter to the best interest of the policyholders, which at the same time can impair the recovery of acquisition expenses or increase anti-selection 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

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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 mis-selling 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.

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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., long-duration 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.

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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.

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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 pre-screened 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

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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. 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.

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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.

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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

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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 ombudsman 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

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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., pre-need 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 websites (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.

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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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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
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.

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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

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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.

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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. Techniques for Assessing Risk and Capital Adequacy

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.,

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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.

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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.
Figure 1

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

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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

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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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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 www.iaisweb.org). 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 www.iaisweb.org) 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 self-explanatory.

1.1 Terms used

Many of the insurance related terms used in this module are defined in the IAIS Glossary of Terms (see www.iaisweb.org). 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 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.

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:

  o 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-of-loss 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 multilime 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 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 un-
insurability emerging from the September 11 2001 terrorist attacks. In general government
contains 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 in 1993 and providing property insurance on natural disasters. FHCF also funds part of its exposure via cat bonds

- The California Earthquake Authority (CEA), established in 1996 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 non-proportional 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 excess-of-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 1 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 non-life 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 addressed 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 impaired. The table below provides detailed of this:

<table>
<thead>
<tr>
<th>Years</th>
<th>No. of Impairments</th>
<th>% of Total Impairments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1978 - 1979</td>
<td>14</td>
<td>1.8%</td>
</tr>
<tr>
<td>1980 - 1981</td>
<td>15</td>
<td>2.0%</td>
</tr>
<tr>
<td>1982 - 1983</td>
<td>23</td>
<td>3.0%</td>
</tr>
<tr>
<td>1984 - 1985</td>
<td>57</td>
<td>7.5%</td>
</tr>
<tr>
<td>1986 - 1987</td>
<td>50</td>
<td>6.6%</td>
</tr>
<tr>
<td>1988 - 1989</td>
<td>64</td>
<td>8.4%</td>
</tr>
<tr>
<td>1990 - 1991</td>
<td>92</td>
<td>12.1%</td>
</tr>
<tr>
<td>1992 - 1993</td>
<td>62</td>
<td>8.1%</td>
</tr>
<tr>
<td>1994 - 1995</td>
<td>34</td>
<td>4.5%</td>
</tr>
<tr>
<td>1996 - 1997</td>
<td>50</td>
<td>6.6%</td>
</tr>
<tr>
<td>1998 - 1999</td>
<td>45</td>
<td>5.9%</td>
</tr>
<tr>
<td>2000 - 2001</td>
<td>76</td>
<td>10.0%</td>
</tr>
<tr>
<td>2002 - 2003</td>
<td>76</td>
<td>10.0%</td>
</tr>
<tr>
<td>2004 - 2005</td>
<td>20</td>
<td>2.6%</td>
</tr>
<tr>
<td>2006 - 2007</td>
<td>16</td>
<td>2.1%</td>
</tr>
<tr>
<td>2008 - 2009</td>
<td>23</td>
<td>3.0%</td>
</tr>
<tr>
<td>2010 - 2011</td>
<td>17</td>
<td>2.2%</td>
</tr>
<tr>
<td>2012 - 2013</td>
<td>13</td>
<td>1.7%</td>
</tr>
<tr>
<td>2014 - 2015</td>
<td>14</td>
<td>1.8%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>761</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

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 to claim 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 www.cii.co.uk).

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 policies 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

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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 www.iaisweb.org). 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 www.iaisweb.org) 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 insurers 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 many 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 highlights 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 an 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 one-year time horizon. This may also include a requirement to project 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 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 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 transferrable 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 www.iaisweb.org). 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.
- 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 inadmissible. 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.
- 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.

**Figure 2: Example of an insurer within a corporate group**

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 www.cii.co.uk).

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?
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

Further information

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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 www.iaisweb.org). 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 www.iaisweb.org) 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 are 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 www.iaisweb.org). 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 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.

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?
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 www.cii.co.uk).

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 protection

Further information

Web:  [www.iaisweb.org](http://www.iaisweb.org)

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<td>2006</td>
<td>Jaroslav Kucera</td>
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<td>2.0</td>
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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 www.iaisweb.org). 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 www.iaisweb.org) 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 www.iaisweb.org). 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 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.
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, off-site 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 can 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:

$$CR_m = s_1 + s_2 + s_3 + \ldots + s_m$$

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:

$$HI = s_1^2 + s_2^2 + s_3^2 + \ldots + s_n^2$$

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:

$$HI = (.10)^2 + (.20)^2 + (.30)^2 + (.40)^2 = 5.5$$

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. 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).
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Module 7.1.1 Market analysis

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### Table 2. Market shares of insurers in the Czech market

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### Core Curriculum for Insurance Supervisors

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:

- $Sc = \left( \sum (s_i - 1) \right) / NP$, where $s_i$ is the scoring for the $i$th complaint
- $Tc = \left( \sum (t_i - 1) \right) / NP$, where $t_i$ is the scoring for the $i$th complaint
- $Fc = \left( \sum (f_i - 1) \right) / NP$, where $f_i$ is the scoring for the $i$th 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:

- $TSc = \left( \sum (s_i \times t_i \times f_i - 1) \right) / NP$. 


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.
### Table 3. Insurance products available in the Czech market

<table>
<thead>
<tr>
<th>Insurance of persons</th>
<th>Property and liability insurance (individuals)</th>
<th>Insurance for credits and business</th>
<th>Agricultural insurance</th>
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<tbody>
<tr>
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**Table Notes:**
- All data is at the time of the data collected on June 30, 2010.
- Data was collected from the insurance companies’ websites and reports.
- Some companies may offer additional insurance products that are not listed.
- Mutual Health Insurance offers a wide range of health insurance products.
- Mutual Car Insurance offers a variety of car insurance products.
- Mutual Property Insurance offers different types of property insurance.
- Mutual Casualty Insurance offers casualty insurance.
- Mutual Liability Insurance offers liability insurance.
- Mutual Workers’ Compensation Insurance offers workers’ compensation insurance.
- Mutual Life Insurance offers life insurance.
- Mutual Disability Insurance offers disability insurance.
- Mutual Pension Insurance offers pension insurance.
- Mutual Annuity Insurance offers annuity insurance.
- Mutual Travel Insurance offers travel insurance.
- Mutual Reinsurance offers reinsurance.
- Mutual Professional Indemnity Insurance offers professional indemnity insurance.
- Mutual Environmental Liability Insurance offers environmental liability insurance.
- Mutual Cyber Risk Insurance offers cyber risk insurance.
- Mutual Data Breach Insurance offers data breach insurance.
- Mutual Cyber Security Insurance offers cyber security insurance.
- Mutual Intellectual Property Insurance offers intellectual property insurance.
- Mutual Product Liability Insurance offers product liability insurance.
- Mutual Environmental Liability Insurance offers environmental liability insurance.
- Mutual Professional Indemnity Insurance offers professional indemnity insurance.
- Mutual Environmental Liability Insurance offers environmental liability insurance.
- Mutual Cyber Risk Insurance offers cyber risk insurance.
- Mutual Data Breach Insurance offers data breach insurance.
- Mutual Cyber Security Insurance offers cyber security insurance.
- Mutual Intellectual Property Insurance offers intellectual property insurance.
- Mutual Product Liability Insurance offers product liability insurance.
- Mutual Environmental Liability Insurance offers environmental liability insurance.
- Mutual Professional Indemnity Insurance offers professional indemnity insurance.
- Mutual Environmental Liability Insurance offers environmental liability insurance.
- Mutual Cyber Risk Insurance offers cyber risk insurance.
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.
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 segment 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 insurance-linked 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 10,000,000,000,000 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 www.cii.co.uk).

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 www.institute.swissre.com) and the interactive materials at the Swiss Re explorer website (www.sigma-explorer.com).
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 9th place 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.

<table>
<thead>
<tr>
<th></th>
<th>Eearned premium</th>
<th>Claims incurred</th>
<th>Claims paid</th>
<th>Claims provisions</th>
<th>Other tech. expenses</th>
<th>Claims ratio (%)</th>
<th>Expense ratio (%)</th>
<th>Combined ratio (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Before the increase</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Company A</td>
<td>250</td>
<td>150</td>
<td>258</td>
<td>125</td>
<td>87.5</td>
<td>60.0</td>
<td>35.0</td>
<td>95.0</td>
</tr>
<tr>
<td>Company B</td>
<td>150</td>
<td>99</td>
<td>69</td>
<td>30</td>
<td>39.0</td>
<td>66.0</td>
<td>26.0</td>
<td>92.0</td>
</tr>
<tr>
<td>Company C</td>
<td>100</td>
<td>60</td>
<td>40</td>
<td>20</td>
<td>30.0</td>
<td>60.0</td>
<td>30.0</td>
<td>90.0</td>
</tr>
<tr>
<td>Market</td>
<td>500</td>
<td>309</td>
<td>134</td>
<td>175</td>
<td>156.5</td>
<td>61.8</td>
<td>31.3</td>
<td>93.1</td>
</tr>
<tr>
<td><strong>After the increase</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Company A</td>
<td>250</td>
<td>175</td>
<td>25</td>
<td>150</td>
<td>87.5</td>
<td>70.0</td>
<td>35.0</td>
<td>105.0</td>
</tr>
<tr>
<td>Company B</td>
<td>150</td>
<td>105</td>
<td>69</td>
<td>36</td>
<td>39.0</td>
<td>70.0</td>
<td>26.0</td>
<td>96.0</td>
</tr>
<tr>
<td>Company C</td>
<td>100</td>
<td>64</td>
<td>40</td>
<td>24</td>
<td>30.0</td>
<td>64.0</td>
<td>30.0</td>
<td>94.0</td>
</tr>
<tr>
<td>Market</td>
<td>500</td>
<td>344</td>
<td>134</td>
<td>210</td>
<td>156.5</td>
<td>68.8</td>
<td>31.3</td>
<td>100.1</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th></th>
<th>GDP (MU)</th>
<th>GDP increase (%)</th>
<th>Population</th>
<th>Pop. increase (%)</th>
<th>Insurance penetration (%)</th>
<th>Insurance spending (%)</th>
<th>Insurance density (MU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starting position</td>
<td>10,000,000,000,000</td>
<td>4.00</td>
<td>20,000,000</td>
<td>0.50</td>
<td>4.50</td>
<td>450,000,000,000</td>
<td>22,500</td>
</tr>
<tr>
<td>After 1 year</td>
<td>10,400,000,000,000</td>
<td>4.00</td>
<td>20,100,00</td>
<td>0.50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After 2 years</td>
<td>10,816,000,000,000</td>
<td>4.00</td>
<td>20,200,500</td>
<td>0.50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After 3 years</td>
<td>11,248,640,000,000</td>
<td>4.00</td>
<td>20,301,503</td>
<td>0.50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After 4 years</td>
<td>11,668,585,600,000</td>
<td>4.00</td>
<td>20,403,010</td>
<td>0.50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After 5 years</td>
<td>12,106,859,024,000</td>
<td>20,505,025</td>
<td>7.50</td>
<td>912,489,678,800</td>
<td>44,501</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.
Answer 14   The answer is shown in the following table.

<table>
<thead>
<tr>
<th></th>
<th>Insurance spending (MU)</th>
<th>Insurance spending at starting position (MU) (inflation adjusted)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starting position</td>
<td>450,000,000,000</td>
<td>450,000,000,000</td>
</tr>
<tr>
<td>After 1 year</td>
<td></td>
<td>459,000,000,000</td>
</tr>
<tr>
<td>After 2 years</td>
<td></td>
<td>468,180,000,000</td>
</tr>
<tr>
<td>After 3 years</td>
<td></td>
<td>477,543,600,000</td>
</tr>
<tr>
<td>After 4 years</td>
<td></td>
<td>487,004,472,000</td>
</tr>
<tr>
<td>After 5 years</td>
<td>912,489,678,800</td>
<td>496,836,361,440</td>
</tr>
</tbody>
</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.
Insurance Core Principles and Common Framework for the Supervision of Internationally Active Insurance Groups

UPDATED NOVEMBER 2019
About the IAIS

The International Association of Insurance Supervisors (IAIS) is a voluntary membership organisation of insurance supervisors and regulators from more than 200 jurisdictions. The mission of the IAIS is to promote effective and globally consistent supervision of the insurance industry in order to develop and maintain fair, safe and stable insurance markets for the benefit and protection of policyholders and to contribute to global financial stability.

Established in 1994, the IAIS is the international standard setting body responsible for developing principles, standards and other supporting material for the supervision of the insurance sector and assisting in their implementation. The IAIS also provides a forum for Members to share their experiences and understanding of insurance supervision and insurance markets.

The IAIS coordinates its work with other international financial policymakers and associations of supervisors or regulators, and assists in shaping financial systems globally. In particular, the IAIS is a member of the Financial Stability Board (FSB), member of the Standards Advisory Council of the International Accounting Standards Board (IASB), and partner in the Access to Insurance Initiative (A2ii). In recognition of its collective expertise, the IAIS also is routinely called upon by the G20 leaders and other international standard setting bodies for input on insurance issues as well as on issues related to the regulation and supervision of the global financial sector.

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This document is available on the IAIS website (www.iaisweb.org).
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**History**

The Insurance Core Principles (ICPs) were adopted on 1 October 2011. Since then, amendments have been made to various individual ICPs, the most recent being:

- ICPs 4, 5 and 23 November 2015
- ICPs 13, 18 and 19 November 2017
- ICP 6 November 2018
- ICP Introduction and Assessment Methodology and ICPs 1, 2, 3, 7, 8, 9, 10, 12, 15, 16, 20, 22, 24, 25 November 2019

Former ICP 11 (Enforcement) has been merged with ICP 10. Therefore, there is no longer an ICP 11; however, to avoid confusion, the existing numbering of other ICPs has not changed.

The Common Framework for the Supervision of Internationally Active Insurance Groups (ComFrame) was adopted in November 2019. ComFrame is presented in blue boxes within the ICP Introduction and Assessment Methodology as well as within the following ICPs: 5, 7, 8, 9, 10, 12, 15, 16, 23 and 25.

The [IAIS Glossary](#) has been revised in November 2019, except for terms related to ICPs 14 and 17. These terms will be revised together with the revision of ICPs 14 and 17, which will commence after the agreement of the ICS Version 2.0 for the monitoring period.
<table>
<thead>
<tr>
<th>Acronyms</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALM</td>
<td>Asset-liability management</td>
</tr>
<tr>
<td>AML</td>
<td>Anti-money laundering</td>
</tr>
<tr>
<td>CDD</td>
<td>Customer due diligence</td>
</tr>
<tr>
<td>CFT</td>
<td>Combating the financing of terrorism</td>
</tr>
<tr>
<td>ComFrame</td>
<td>Common Framework for the Supervision of Internationally Active Insurance</td>
</tr>
<tr>
<td></td>
<td>Groups</td>
</tr>
<tr>
<td>ERM</td>
<td>Enterprise Risk Management</td>
</tr>
<tr>
<td>FATF</td>
<td>Financial Action Task Force</td>
</tr>
<tr>
<td>FIU</td>
<td>Financial intelligence unit</td>
</tr>
<tr>
<td>IAIG</td>
<td>Internationally Active Insurance Group</td>
</tr>
<tr>
<td>IAIG CMG</td>
<td>Crisis management group of the Internationally Active Insurance Group</td>
</tr>
<tr>
<td>ICP</td>
<td>Insurance Core Principle</td>
</tr>
<tr>
<td>ICS</td>
<td>Insurance Capital Standard</td>
</tr>
<tr>
<td>IDR</td>
<td>Independent Dispute Resolution</td>
</tr>
<tr>
<td>IFRS</td>
<td>International Financial Reporting Standards</td>
</tr>
<tr>
<td>IGT</td>
<td>Intra-group transactions</td>
</tr>
<tr>
<td>IL</td>
<td>Insurance liability</td>
</tr>
<tr>
<td>MCR</td>
<td>Minimum Capital Requirement</td>
</tr>
<tr>
<td>MIS</td>
<td>Management information system</td>
</tr>
<tr>
<td>ML</td>
<td>Money laundering</td>
</tr>
<tr>
<td>MMOU</td>
<td>Memorandum of Understanding</td>
</tr>
<tr>
<td>MOCE</td>
<td>Margin Over the Current Estimate</td>
</tr>
<tr>
<td>NCWOL</td>
<td>No creditor worse off than in liquidation</td>
</tr>
<tr>
<td>NRA</td>
<td>National Risk Assessment</td>
</tr>
<tr>
<td>ORSA</td>
<td>Own Risk and Solvency Assessment</td>
</tr>
<tr>
<td>PCR</td>
<td>Prescribed Capital Requirement</td>
</tr>
<tr>
<td>PPS</td>
<td>Policyholder Protection Scheme</td>
</tr>
<tr>
<td>RBA</td>
<td>Risk-Based Approach</td>
</tr>
<tr>
<td>SPE</td>
<td>Special Purpose Entity</td>
</tr>
<tr>
<td>SRO</td>
<td>Self-regulatory organisation</td>
</tr>
<tr>
<td>TF</td>
<td>Terrorist financing</td>
</tr>
<tr>
<td>TVaR</td>
<td>Tail value at risk</td>
</tr>
<tr>
<td>VaR</td>
<td>Value at risk</td>
</tr>
</tbody>
</table>
Introduction and Assessment Methodology

A) Introduction

1. Established in 1994, the International Association of Insurance Supervisors (IAIS) is a voluntary membership organisation of insurance supervisors and regulators from around the globe. It is the international standard-setting body responsible for developing and assisting in the implementation of supervisory and supporting material for insurance supervision. The IAIS also provides a forum for members to share their experiences and understanding of insurance supervision and insurance markets.

2. The mission of the IAIS is to promote effective and globally consistent supervision of the insurance industry in order to develop and maintain fair, safe and stable insurance markets for the benefit and protection of policyholders and to contribute to global financial stability. In this context, the IAIS has issued the Insurance Core Principles (ICPs), which are comprised of Principle Statements, Standards and Guidance, as a globally accepted framework for insurance supervision. The ICPs seek to encourage the maintenance of consistently high supervisory standards in IAIS member jurisdictions. A sound supervisory system is necessary for the protection of policyholders and promoting the stability of the financial system and should address the broad set of risks within, and posed by, the insurance sector.

Structure

3. The ICP material is presented according to the following hierarchy:

   - Principle Statements – the highest level in the hierarchy which set out the essential elements that must be present in a jurisdiction in order to protect policyholders, promote the maintenance of fair, safe and stable insurance markets and contribute to financial stability. In each ICP, the Principle Statement is numbered and presented in a box with bold font.

   - Standards – the next level in the hierarchy linked to specific Principle Statements. Standards set out key high-level requirements that are fundamental to the implementation of the Principle Statement and should be met for a jurisdiction to demonstrate observance with the particular Principle Statement. Standards are presented in bold font, with the number of the applicable principle statement followed by the Standard number (for example, the second standard under Principle Statement 3 appears as 3.2).

   - Guidance – the lowest level in the hierarchy supporting the Principle Statement and/or Standards. Guidance facilitates the understanding and application of the Principle Statement and/or Standards; it does not represent any requirements. The wording used in Guidance varies to reflect the intended weight of the text; for example, the use of “should” provides more of a recommendation, whereas the use of “may” is more of a suggestion. Where appropriate, Guidance provides examples of ways to implement the Principle Statements and/or Standards. Guidance is presented in regular font, with the number of the Principle Statement and Standard followed by the Guidance number (for example, the first paragraph of guidance under Standard 3.2 appears as 3.2.1).

Overarching Concepts

4. There are a number of important overarching concepts to understand and keep in mind when reading and implementing the ICPs. While an individual ICP may focus on one particular subject, the ICPs need to be considered as a whole with these overarching concepts being relevant throughout.
Applicability

5. The ICPs apply to insurance supervision in all jurisdictions regardless of the level of development or sophistication of insurance markets, and the type of insurance products or services being supervised.

6. The ICPs apply to the supervision of all insurers, whether private or government-controlled insurers that compete with private enterprises, wherever their business is conducted, including through e-commerce.

7. Generally, the ICPs are equally applicable to the business of insurers and reinsurers. Where the ICPs do not apply to reinsurers, this is indicated in the text.

8. The ICPs only apply to the supervision of intermediaries where this is specifically indicated.

Proportionality and risk-based supervision

9. The ICPs establish the minimum requirements for effective insurance supervision and are expected to be implemented and applied in a proportionate manner. Therefore, proportionality underlies all the ICPs. Supervisors have the flexibility to tailor their implementation of supervisory requirements and their application of insurance supervision to achieve the outcomes stipulated in the Principle Statements and Standards.

- Implementation - proportionality allows the ICPs to be translated into a jurisdiction’s supervisory framework in a manner appropriate to its legal structure, market conditions and consumers.

- Application - proportionality allows the supervisor to increase or decrease the intensity of supervision according to the risks inherent to insurers, and the risks posed by insurers to policyholders, the insurance sector or the financial system as a whole. A proportionate application involves using a variety of supervisory techniques and practices which are tailored to the insurer to achieve the outcomes of the ICPs. Such techniques and practices should not go beyond what is necessary in order to achieve their purpose.

10. Risk-based supervision is a related concept but distinct from proportionality; it means more supervisory activities and resources are allocated to insurers, lines of business or market practices that pose the greatest risk to policyholders, the insurance sector, or the financial system as a whole.

Terminology

11. In these ICPs, terms have the same meaning as set out in the IAIS Glossary.

12. The term “supervision” is used to refer to supervision and regulation. Similarly, the term “supervisor” also refers to “regulator”. The expectation is that the Principle Statements and Standards are implemented within a jurisdiction by all authorities in accordance with their respective responsibility in relation to insurance supervision, rather than necessarily by only one authority. Therefore, the term “supervisor” is used to refer collectively to those authorities within a jurisdiction with such responsibility. It is essential that in situations where multiple authorities exist, arrangements be established between them to ensure that the implementation of the Principle Statements and Standards within the jurisdiction occurs within a framework that makes clear which authority is accountable for which functions.
13. The term “policyholder” is used to refer to a person (natural or legal) who holds an insurance policy, and includes, where relevant, other beneficiaries and claimants with a legitimate interest in the policy.

14. The term “legislation” is used to include primary legislation (which generally requires full legislative consent), secondary legislation and legally enforceable rules set by the supervisor. The ICPs do not generally require a specific form of legislation but where they do this is specifically indicated.

15. The term “insurer” means insurance legal entities and insurance groups, including insurance-led financial conglomerates. The Principle Statements and Standards apply to the supervision of insurance legal entities and, unless otherwise specified, to insurance groups, including the head of the insurance group. The application may vary and, where necessary, further guidance is provided.

**Group-Wide Supervision**

16. It is recognised that the implementation of the Principle Statements and Standards relevant to group-wide supervision may vary across jurisdictions depending on the supervisory powers and structure within a jurisdiction. There are direct and indirect approaches to group-wide supervision.

- Under the direct approach, the supervisor has the necessary powers over the parent and other legal entities in the insurance group and can impose relevant supervisory measures directly on such legal entities, including non-regulated legal entities.

- Under the indirect approach, supervisory powers focus on the insurance legal entities and supervisory measures are applied to those insurance legal entities to address the group-wide risks posed by other entities within the group, including non-regulated legal entities.

There may also be different combinations of elements of direct and indirect approaches.

17. Regardless of the approach, the supervisor must be able to deliver effective group-wide supervision, including that all relevant group-wide risks impacting the insurance entities are addressed appropriately.

**Group corporate governance and materiality**

18. The head of an insurance group is ultimately responsible for the group’s sound and prudent management. In doing so, it is important to take into account the risks and activities of the individual legal entities within the group, focusing in particular on those which are material for the group as a whole.

19. While the ultimate responsibility for an insurance group’s corporate governance lies with the head of the group, the legal entities within the group are fully responsible for their own sound and prudent management.

**ComFrame Introduction**

20. In the context of its mission, the IAIS has issued the Common Framework for the Supervision of Internationally Active Insurance Groups (ComFrame), which establishes supervisory standards focusing on the effective group-wide supervision of internationally active insurance groups (IAIGs).

21. ComFrame provides quantitative and qualitative supervisory minimum requirements tailored to the international activity and size of IAIGs. ComFrame seeks to assist supervisors in: addressing group-wide activities and risks; identifying and avoiding
supervisory gaps; coordinating supervisory activities efficiently and effectively between the group-wide and other involved supervisors. ComFrame also aims to provide a basis for comparing IAIG supervision across jurisdictions. However, it does not create a one-size-fits-all approach to IAIG supervision as, ultimately, what is important is that supervisors and IAIGs achieve the outcomes described by ComFrame.

22. As part of ComFrame, the IAIS is developing an insurance capital standard (ICS), which aims to provide a globally comparable risk-based measure of capital adequacy of IAIGs. ICS Version 2.0 is presented in a stand-alone document and is being used during a five-year monitoring period for confidential reporting to group-wide supervisors and discussion in supervisory colleges. The ICS is not used as a group-wide Prescribed Capital Requirement (PCR) during the monitoring period. In the second phase of implementation of ICS Version 2.0, the ICS will be implemented as a group-wide PCR.

Structure

23. The ICPs are applicable to the supervision of all insurers within a jurisdiction, which includes IAIGs. ComFrame provides additional Standards and Guidance applicable only to the supervision of IAIGs. The qualitative requirements of ComFrame material is presented in blue boxes within the relevant ICP material, following a similar hierarchy to the ICPs:

- **ComFrame Standards** – the highest level in the ComFrame hierarchy which build on certain ICP Principle Statements and/or ICP Standards. ComFrame Standards are outcomes-focused, specific requirements for supervisors. ComFrame Standards are presented in bold font, and follow the numbering of the relevant ICP Principle Statement and/or ICP Standard with the addition of “CF” and a letter (for example, the second ComFrame Standard under ICP Standard 7.2 would appear as CF 7.2.b).

- **ComFrame Guidance** – the lowest level in the ComFrame hierarchy which provides support for ComFrame Standards. ComFrame Guidance is intended to facilitate the understanding and application of a ComFrame Standard; it does not represent any requirements. Where appropriate, ComFrame Guidance provides examples of ways to implement a ComFrame Standard. ComFrame Guidance is presented in regular font, with the number and letter of the ComFrame Standard followed by the ComFrame Guidance number (for example, the first paragraph of ComFrame Guidance under ComFrame Standard CF 7.2.b would appear as CF 7.2.b.1).

Overarching Concepts

24. The overarching concepts identified in the ICP Introduction are equally applicable to ComFrame, in particular proportionality. Additionally, there are several, ComFrame-specific overarching concepts to understand and keep in mind when reading and implementing ComFrame.

Allocation of roles

25. The group-wide supervisor takes responsibility for the supervision of the IAIG as a whole, on a group-wide basis. Other involved supervisors are responsible for the supervision of the IAIG’s individual insurance legal entities in their respective jurisdictions and take into account the effect of their supervisory actions on the rest of the IAIG.
Governance structures

26. IAIGs have different models of governance (ie more centralised or more decentralised). ComFrame does not favour any particular governance model and is intended to be read to apply to all models. The organisation of an IAIG can be structured in various ways as long as the outcomes are achieved.

Group-Wide Supervision

27. Similar to the ICPs, ComFrame, for the most part, is neutral as to direct or indirect approaches to group-wide supervision, so long as the intended outcomes of the group-wide supervision are achieved. Where ComFrame uses a direct approach for certain powers, it is indicated in the relevant ComFrame Standards.

B) Assessment Methodology

28. The IAIS strongly encourages implementation of the ICPs as a means to ensure each jurisdiction has a framework for effective insurance supervision. Assessment of a jurisdiction’s observance of the ICPs can facilitate effective implementation by identifying the extent and nature of strengths and weaknesses in a jurisdiction’s supervisory framework – especially those aspects that could affect policyholder protection and financial stability.

29. The framework described by the ICPs is general. When implementing the ICPs in a jurisdiction, it is important to take into account the domestic context, characteristics of the insurance sector and developmental stage of the financial system and overall macroeconomic conditions. How the ICPs are implemented will vary across jurisdictions. While established implementation practices should be kept in mind, there is no mandated method of implementation. When carrying out an assessment, it is important to take into account factors that have shaped the implementation choices made in the jurisdiction.

30. Assessments against the ICPs can be conducted in a number of contexts including:

- self-assessments performed by the jurisdiction itself. These may be performed with the assistance of outside experts and/or followed by peer review and analysis;
- reviews conducted by third parties; or
- reviews in the context of the Financial Sector Assessment Program (FSAP) conducted by the International Monetary Fund (IMF) and World Bank.

31. The methodology that should be followed when carrying out an assessment of a jurisdiction’s observance of the ICPs is set out below. Following the methodology should result in greater consistency between assessments, especially assessments of different jurisdictions performed by different assessors. While the results of an assessment may not always be made public, it is still important for their credibility that similar types of assessments are conducted in a broadly uniform manner from jurisdiction to jurisdiction.

Scope of assessments

32. An assessment may be conducted on a system-wide jurisdictional basis or focus on specific areas. While thematic assessments have a role, the IAIS has designed the ICPs as a comprehensive and holistic framework, with each ICP being integral in the creation of a sound supervisory system.
33. Where more than one authority is involved in a jurisdiction’s insurance supervision process, the allocation and interaction of supervisory roles should be clearly described in the assessment. If an assessment is conducted in the context of an individual authority within a jurisdiction, a Standard may be not applicable if responsibility (either for its implementation or its delivery on a day-to-day basis) lies with another authority within that jurisdiction. However, the authority responsible for the observance of that Standard should be indicated in the report.

34. The ICPs are written to be equally applicable to both life and non-life sectors. However, where there are material differences between the life and non-life sectors, such that it would give rise to different results had they been assessed separately, the assessor may consider assigning separate levels of observance for each sector accordingly. In such cases, the distinction should be clearly identified and explained in any assessment report.

**Use of experts**

35. The process of assessing observance of the ICPs requires a judgmental weighing of numerous elements. It is important, therefore, that assessors are well qualified with relevant background, professional knowledge and practical experience. Assessors not familiar with insurance supervision, the insurance sector or entities and products that may be unique to the jurisdiction being assessed, could come to incorrect or misleading conclusions.

**Access to information**

36. When conducting an assessment, assessors need to have access to a range of information and people. The required information may include published information (such as the legislation and administrative policies) as well as non-published information (such as self-assessments performed and operational guidelines used by the supervisor). The supervisor may provide confidential information to the assessors, provided confidentiality is preserved. Information should be provided to and analysed by the assessors in advance, to the extent possible, to ensure that any on-site visits are efficient and derive the most value. The assessors may need to meet with various individuals and organisations, including the supervisor, other domestic supervisory authorities, relevant government ministries, insurers and insurance industry associations, consumer groups, actuaries, auditors, and other financial sector participants.

**Assessment process**

37. Assessments should be based solely on the legislation and supervisory practices that are in place at the time. As a result, it is important to recognise when an assessment is conducted and to record this in the report. Nevertheless, improvements already proposed or scheduled for implementation by the supervisor should be noted in the assessment report by way of additional comments so as to provide recognition for efforts that are important, but not yet fully implemented. Additionally, the assessment should consider whether supervisory practices adequately meet the outcomes provided for in legislation and whether the supervisor enforces compliance. Having legislation without the necessary corresponding supervisory practices is not sufficient to demonstrate full observance.

38. Performing an assessment is not an exact science. Assessors should perform a comprehensive assessment of the degree and effectiveness of implementation for each Principle Statement and Standard rather than a checklist approach. The goal of the assessment should not be simply to apply a grade to the level of observance but to
identify areas that need attention in order for the jurisdiction to achieve the outcomes identified in the ICPs.

**Assessment of Standards**

39. The Standards set requirements that are fundamental to the implementation of each Principle Statement. They also facilitate assessments that are comprehensive, precise and consistent. In making an assessment, each of the Standards under a Principle Statement has to be considered. As noted in the ICP Introduction, Guidance is intended to facilitate the understanding and application of the Principle Statement and/or Standard and does not prescribe any requirements, therefore it should not be assessed for observance.

40. The Standards should be assessed using five categories:

- **Observed** – for a Standard to be considered observed it is necessary that the supervisor has and exercises, when required, the legal authority and supervisory practices to effectively perform the requirements of the Standard. Having legislation without supervisory practices to implement a Standard is insufficient to be considered observed, except for those Standards that are specifically focused on legislation itself and what it contains. For supervisory practices which may lack explicit legal authority, the assessment should be considered as observed if the practice is clearly substantiated by the supervisor and is generally accepted by stakeholders. Having the necessary resources is essential for the supervisor to implement Standards effectively.

- **Largely observed** – for a Standard to be considered as largely observed, it is necessary that only minor shortcomings exist which do not raise any concerns about the supervisor’s ability to achieve full observance with the Standard within a prescribed period of time. The assessment of largely observed can be used when the jurisdiction does not meet all the criteria, but the overall effectiveness is sufficiently good and no material risks are left unaddressed.

- **Partly observed** – for a Standard to be considered partly observed, there are sufficient shortcomings to raise doubts about the supervisor’s ability to achieve observance.

- **Not observed** – for a Standard to be considered not observed, there is no substantive progress toward achieving observance.

- **Not applicable** – for a Standard to be considered not applicable, the Standard does not apply given the structural, legal and institutional features of a jurisdiction.

**Assessment of Principle Statements**

41. As noted above, the level of observance for each Principle Statement reflects the assessments of its Standards. The Principle Statements should be assessed using five categories:

- **Observed** – for a Principle Statement to be considered observed, all the Standards must be considered observed (except any Standards that are considered not applicable).

- **Largely observed** – for a Principle Statement to be considered largely observed, it is necessary that only minor shortcomings exist which do not raise any concerns about the supervisor’s ability to achieve full observance with the Principle Statement.
• **Partly observed** – for a Principle Statement to be considered partly observed, there are sufficient shortcomings to raise doubts about the supervisor’s ability to achieve observance.

• **Not observed** – for a Principle Statement to be considered not observed, there is no substantive progress toward achieving observance.

• **Not applicable** – for a Principle Statement to be considered not applicable, all the Standards must be considered not applicable.

**Reporting**

42. The IAIS does not prescribe a set format or content of reports that result from an assessment. However, it is recommended that an assessment report should:

- be in writing;
- identify the scope and timing of the assessment;
- identify the assessors;
- provide an assessment of observance;
- refer to the information reviewed and meetings conducted, and note when any necessary information was not provided and the impact that this may have had on the accuracy or completeness of the assessment;
- include any formal comments provided by the supervisor in response to the assessment; and
- include prioritised recommendations for improving observance of the ICPs assessed.

43. While encouraged, it is the jurisdiction’s discretion whether to publish the results of an assessment. Nevertheless, it is important for the credibility of assessments that they are conducted in a broadly uniform manner across jurisdictions.

**ComFrame Assessment Methodology**

44. As with the ICPs, the IAIS strongly encourages implementation of ComFrame as a means to ensure that jurisdictions to which ComFrame is applicable have a framework for effective supervision of IAIGs. In general, the assessment methodology described for the ICPs is applicable to ComFrame. However, given the nature of ComFrame, which provides quantitative and qualitative supervisory requirements tailored to the international activity and size of IAIGs, there are some additional considerations that should be taken into account when assessing observance of ComFrame requirements.

**Role of involved supervisors**

45. ComFrame seeks to assist supervisors in coordinating supervisory activities efficiently and effectively between the group-wide and other involved supervisors, thus a number of ComFrame Standards address coordination. However, it is recognised that having efficient and effective coordination depends on all involved supervisors. The group-wide supervisor relies on the other involved supervisors to do their part and vice versa. Where there are shortcomings with an involved supervisor doing their part for coordination, there are limits to what the other supervisors can do to improve the situation. When assessing parts of ComFrame that focus on coordination, this should be taken into account.
46. The type of assessment of a jurisdiction’s implementation of ComFrame will depend on whether, in that jurisdiction, there is: a group-wide supervisor of an IAIG; an other involved supervisor; or both. Most ComFrame Standards are addressed to the group-wide supervisor and describe the outcomes they are expected to achieve, whereas some ComFrame Standards also include the other involved supervisors. Therefore, an assessment of a jurisdiction’s implementation of ComFrame should reflect the role it has in the supervision of an IAIG. A jurisdiction where there is only an other involved supervisor will not be assessed on the implementation of ComFrame Standards that are addressed only to the group-wide supervisor.

47. For ComFrame Standards that are addressed to both the group-wide supervisor and other involved supervisors, the assessment of those Standards should be based on the role of the jurisdiction’s supervisor. An assessment of a group-wide supervisor jurisdiction should focus on whether it has put in place the necessary legislation and supervisory practices for coordination with the other involved supervisors, whereas an assessment of an other involved supervisor jurisdiction would focus on its role within this context (for example, coordinating with the group-wide supervisor on processes, exchanging information).

**Reporting**

48. Involved supervisors are encouraged to share the results of an assessment within the supervisory college for information.

**Assessment process**

49. As some ComFrame Standards focus on coordination and information exchange between the group-wide supervisor and other involved supervisors, in demonstrating observance of such Standards there may be more emphasis on supervisory practices rather than legislation. While legislation provides the authority to coordinate and exchange information, the supervisor, more importantly, needs to have appropriate supervisory practices for coordination in place that facilitate effective supervision of an IAIG.

**Interaction with assessments of ICPs**

50. The ICPs are applicable to the supervision of all insurers within a jurisdiction, which includes IAIGs. ComFrame provides additional Standards and Guidance applicable only to the supervision of IAIGs. As the ICPs provide the necessary foundation for ComFrame, an assessment of ComFrame Standards cannot be done in isolation. It should be determined in advance of an assessment whether the level of observance of ComFrame Standards is included when assessing the level of observance of the relevant Principle Statements within the ICPs or whether an assessment of the level of observance of ComFrame Standards is treated separately.

**Preconditions for effective insurance supervision**

51. An effective system of insurance supervision requires a number of preconditions to be in place, as they can have a direct impact on supervision in practice. An assessment of a jurisdiction’s observance of the Principle Statements and Standards may involve a review of preconditions for effective insurance supervision.

52. This section provides a number of categories of preconditions and descriptions of how each precondition may be reviewed. The preconditions include:

- sound and sustainable macroeconomic and financial sector policies;
• a well-developed public infrastructure;
• effective market discipline in financial markets;
• mechanisms for providing an appropriate level of protection; and
• efficient financial markets.

53. As these preconditions are normally outside the control or influence of the supervisor, and because they are beyond the scope of the ICPs, an assessment should not evaluate a jurisdiction’s observance of the preconditions. Instead, the objective of a review of preconditions is to help inform an assessment of observance of the ICPs because the preconditions can directly impact the effectiveness of supervision. Where shortcomings exist, the supervisor should make its government aware of these and their actual or potential repercussions for the achievement of supervisory objectives and seek to mitigate the effects of such shortcomings on the effectiveness of supervision.

54. Any report on a review of preconditions should:
• be descriptive and not express an opinion on the adequacy of policies in these areas, other than through reference to analyses and recommendations in existing official documents;
• include an analysis of the linkages between these factors and the resilience of the insurance sector, when relevant;
• give a clear picture of the adequacy of the preconditions within the jurisdiction and the interaction of the preconditions with the assessment of observance with the ICPs; and
• flag any individual ICPs which are most likely to be affected by any material weakness in the preconditions.

**Sound and sustainable macroeconomic and financial sector policies**

55. Sound macroeconomic policies are the foundation of a stable financial system. This is not within the mandate of supervisors, although they will need to react if they perceive that existing policies are undermining the safety and soundness of the financial system. In addition, financial sector supervision needs to be undertaken within a transparent government policy framework aimed at ensuring financial stability, including effective supervision of the insurance and other financial sectors.

56. A review of this precondition should include a review of the relevant government financial sector policies, including whether there is a clear and published framework assigning responsibility to different bodies involved in financial stability and supervisory work.

**Well-developed public infrastructure**

57. A well-developed public infrastructure contains the following elements which, if not adequately provided, can contribute to the weakening of the financial system or frustrate their improvement:
• a system of business laws, including corporate, insolvency, contract, consumer protection and private property laws, which is consistently enforced and provides a mechanism for the fair resolution of disputes;
• an efficient and independent judiciary;
• use of comprehensive and well-defined accounting principles and rules that command wide international acceptance;

• a system of independent audits for companies to ensure that users of financial statements, including insurers, have independent assurance that the accounts provide a true and fair view of the financial position of the company and are prepared according to established accounting principles, with auditors held accountable for their work;

• the availability of skilled, competent, independent and experienced actuaries, accountants and auditors, whose work complies with transparent technical and ethical standards set and enforced by official or professional bodies in line with international standards and is subject to appropriate oversight;

• well defined rules governing, and adequate supervision of, other financial sectors;

• access to a secure payment and clearing system for the settlement of financial transactions where counterparty risks are controlled; and

• the availability to the supervisor, financial services and public of basic economic, financial and social statistics.

58. A review of the public infrastructure should focus on elements relevant to the insurance sector.

**Effective market discipline in financial markets**

59. Effective market discipline depends, in part, on adequate flows of information to market participants, appropriate financial incentives to reward well-managed institutions, and arrangements that ensure investors are not insulated from the consequences of their decisions. Among issues to be addressed are the existence of appropriate corporate governance frameworks and ensuring that accurate, meaningful, transparent and timely information is provided by issuers and borrowers to investors and creditors.

60. A review of the effectiveness of market discipline could cover issues such as:

• the presence of rules on corporate governance;

• transparency and audited financial disclosure;

• appropriate incentive structures for the hiring and removal of managers and Board Members;

• protection of shareholders’ and other stakeholders’ rights;

• adequate availability of market and consumer information; and

• an effective framework for new entrants, mergers, takeovers, and acquisition of equity interests, including those involving foreign entities.

**Mechanisms for providing an appropriate level of policyholder protection**

61. In general, deciding on the appropriate level of policyholder protection is a policy question to be addressed by each jurisdiction. Protection mechanisms could include, for example, a hierarchy of claims or a policyholder protection scheme. Provided such mechanisms are transparent and carefully designed to limit moral hazard, they can contribute to public confidence. For issues such as crisis management or the resolution of an insurer, the supervisor should have a role to play given its in-depth knowledge of the entities involved.

**Efficient financial markets**

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62. Efficient financial markets are important to provide investment and risk management opportunities for insurers. Insurers benefit by having access to domestic and global financial markets.

63. A review of whether there are efficient financial markets could cover, for example, the range of instruments and issuers (e.g. are there a spread of public sector issues, index-linked as well as conventional government bonds) and the spread of available maturities. A review could take note of how liquidity has been affected in markets in periods of stress. A review should focus on relevant issues for the carrying on of insurance business, taking into account the products offered, such as whether annuities or other long term contracts of insurance are provided.
ICP 1 Objectives, Powers and Responsibilities of the Supervisor

Each authority responsible for insurance supervision, its powers and the objectives of insurance supervision are clearly defined.

Introductory Guidance

1.0 Introductory Guidance

1.0.1 Publicly defined objectives foster transparency. Based on this, government, legislatures and other stakeholders, including insurance industry participants and consumers, can form expectations about insurance supervision and assess how well the supervisor is achieving its objectives and fulfilling its responsibilities.

1.0.2 Responsibilities and objectives of the supervisor should be stable over time. However, when those responsibilities and objectives are updated periodically, it should be done in a manner that avoids creating instability, as a stable business environment is important for the insurance sector and consumer confidence. Objectives and key aspects of the supervisor responsibilities should be defined in primary legislation to the extent that it needs the effect of law. Aspects that should undergo frequent updating due to changing circumstances should be supplemented as needed with updated legally enforceable rules and guidance.

1.1 Primary legislation clearly defines the authority (or authorities) responsible for insurance supervision.

1.1.1 Primary legislation should clearly define responsibilities of each authority involved in insurance supervision at both the insurance legal entity level and the group-wide level.

1.1.2 Institutional frameworks for insurance supervision vary across jurisdictions. For example, there may be separate authorities for prudential and market conduct supervision, for macro and micro prudential supervision, for licensing and ongoing supervision, and resolution.

1.1.3 Where there are multiple authorities responsible for insurance supervision, the institutional framework, the main responsibilities of the respective authorities and a basis for cooperation and coordination should be clearly set out in primary legislation.

1.2 Primary legislation clearly determines the objectives of insurance supervision and these include at least to:

- protect policyholders;
- promote the maintenance of a fair, safe and stable insurance market; and
- contribute to financial stability.

1.2.1 The precise supervisory objectives and their respective priority may vary by jurisdiction depending on the level of development of the insurance markets, market conditions and consumers. Supervisory objectives could also include promoting insurance market development, financial
inclusion, financial consumer education, and contributing to fighting financial crime.

1.2.2 The policyholders to be considered in defining supervisory objectives include past, present and future policyholders.

1.2.3 Depending on the evolution of the jurisdiction’s insurance or financial markets, the supervisor may emphasise temporarily one or more of the objectives. Regardless, the supervisor should take into account the other objectives in fulfilling its function. In such circumstances, this should be explained to stakeholders, including insurance industry participants, consumers and the general public.

1.3 Primary legislation gives the supervisor adequate powers to meet its responsibilities and objectives.

1.3.1 Primary legislation should give the supervisor the necessary powers to achieve its responsibilities and objectives, and the ability to take supervisory action adequately. The supervisor should have the powers needed to implement a framework for effective insurance supervision, which is described by the ICPs in general.

1.3.2 Legislation should clearly address insurance legal entity and group-wide supervision, providing the supervisor with sufficient powers to achieve the respective responsibilities and objectives.

1.3.3 The supervisor should have sufficient powers in place to perform the role of a group-wide supervisor, including coordination and collaboration with other relevant supervisors. Additionally, the legislation should empower the supervisor of an insurance legal entity which is part of a group to contribute to the supervision of that group on a group-wide basis.

1.4 The supervisor initiates or proposes changes in legislation where current responsibilities, objectives or powers are not sufficient to meet the intended supervisory outcomes.

1.4.1 It is important that supervisory responsibilities, objectives and powers are aligned with actual challenges faced by the insurance market to effectively protect policyholders, maintain a fair, safe and stable insurance market and contribute to financial stability.

1.4.2 Market changes can mean that the legislation is no longer adequate for the supervisor to achieve its intended outcomes. The supervisor may identify changes in the economy, society or business environment in general that affect insurance supervisions that are not currently or sufficiently addressed by legislation. When the supervisory outcomes may not be achieved with the current legislation, the supervisor should initiate or propose changes in legislation.

1.4.3 If supervisory responsibilities, objectives or powers assigned by primary legislation become obsolete, the supervisor should initiate or propose changes to the legislation.
2.0

Introductory Guidance

2.0.1 Operational independence, accountability and transparency by the supervisor contribute to the legitimacy and credibility of the supervisory process. As explained in this introductory guidance, the three concepts of independence, accountability and transparency are closely interconnected and mutually dependent.

2.0.2 Operational independence means the supervisor should be able to take actions and make decisions in the exercise of its supervisory responsibilities without interference from any part of the government, including other governmental bodies, the legislature, and the insurance sector. The supervisor should be able to carry out the supervisory process, take supervisory measures and impose sanctions as it deems necessary to fulfil its objectives. However, this independence should be balanced with accountability.

2.0.3 The supervisor should be accountable for the actions it takes in the exercise of its supervisory responsibilities to the government, including other governmental bodies and the legislature, which delegated various responsibilities to the supervisor, as well as to those it supervises and the public at large. Accountability means that the supervisor operates within the bounds of its delegated authority, in a fair and equitable manner that is open to scrutiny and review by the government and the public, and that the actions of the supervisor may be challenged as part of a judicial appeal process. Strong internal governance processes, sufficient and skilled human resources and maintenance of high standards of integrity and professionalism underpin the accountability of the supervisor.

2.0.4 Transparency reinforces accountability. Transparency increases the predictability of supervision and shapes the expectations of supervised entities, which enhances supervisory effectiveness. For these reasons, supervisory requirements, supervisory processes as well as information about the supervisor’s responsibilities should be publicly disclosed, in a manner consistent with any confidentiality requirements imposed on the supervisor.

2.0.5 The structures of supervisors vary across jurisdictions. For example, a supervisor can be structured as a separate independent entity governed by a Board of Directors, as a commission or as a body overseen by one appointed individual. No one single structure is appropriate for all supervisors. Regardless of their structure, all supervisors should have processes and safeguards that allow them to be operationally independent, accountable and transparent.

2.0.6 Given the differences in structures between supervisors, in this ICP, the “governing body” refers to the body of individuals that exercises
oversight of the supervisory organisation, such as a Board or commission, or in the case of a supervisor overseen by an appointed individual, to that individual. The “head of the supervisor” refers to the individual who is an employee of the supervisor and who leads the management team and exercises full management responsibility for the day-to-day functioning and decisions of the supervisor. The head of the supervisor may or may not also be a member of the governing body.

Independence

2.1 The supervisor is operationally independent and free from undue government or industry interference that compromises that independence.

2.1.1 Operational independence of the supervisor includes having the discretion to allocate its resources, including financial and human resources, and to carry out the supervisory process in accordance with its objectives and the risks the supervisor perceives. Having this discretion, which underpins operational independence, should be recognised in primary legislation.

2.1.2 The supervisor should be financed in a manner that does not undermine its independence. A wide variety of financing models exist, such as financing by government, levies imposed on supervised entities and combinations thereof. To help ensure the supervisor’s independence is not compromised, the method in which it is financed should be stable, predictable and transparent, and prevent interference from its funding source.

2.1.3 The institutional relationships and accountability frameworks between the supervisor and the government should be clearly defined in legislation. It is important to specify the circumstances and processes for sharing information, consultation or approval between the supervisor and the government. This may include establishing what information should be provided, how each entity should consult on matters of mutual interest and when approval from relevant authorities is necessary. The daily operations of the supervisor should not be subject to consultation with or approval by the government. In exceptional circumstances, the supervisor may choose to consult with the government in relation to a supervisory decision where there are major socio-economic implications of that decision.

2.1.4 In addition to independence from the government, the supervisor should not permit excessively close relationships, or even the appearance thereof, with industry participants, in particular supervised entities. Such relationships can compromise the supervisor’s ability to enforce the law strictly or to control the behaviour of supervised entities as intended by law. These relationships can also lead the supervisor to make policy or operational decisions to benefit supervised entities, whether a particular entity or supervised entities as a whole, rather than in furtherance of its supervisory objectives. The supervisor’s policies, for example, post-employment, anti-corruption and accountability in decision-making, should seek to avoid such close relationships.

2.1.5 The legislation should define the responsibilities of the governing body. In cases where there are industry representatives or elected officials or government employees on the governing body of the supervisor, the
The composition of the governing body should be sufficiently diverse to prevent such representatives from controlling the supervisor.

2.1.6 The supervisor’s staff and members of its governing body can also experience pressures that could compromise their independence. Generally, the staff of the supervisor should not hold any consultancies, directorships or financial interests, expect any future benefit from, or be involved in any capacity in the entities it supervises, other than in a supervisory role or as a customer, and should not accept gifts or hospitality from these entities in excess of a low monetary value. The supervisor should have policies and processes or a code of conduct to avoid or manage real, potential or perceived conflicts of interests. The supervisor should require its staff and members of its governing body to report conflicts of interests. Staff and members of the governing body of the supervisor should exclude themselves from decisions where they have a conflict of interest.

2.2 Legislation governing the supervisor provides the necessary legal protection from legal action against the supervisor and its staff for actions taken in good faith while discharging their duties. In addition, the supervisor’s staff is adequately protected against the costs of defending their actions.

2.2.1 Having necessary legal protection from legal action promotes the independence of the supervisor by enabling its staff to make decisions and take action against a regulated legal entity even though such action or decision may be contested by that entity.

2.2.2 In this context, legislation should protect the supervisor and its staff from criminal or civil liability for decisions made and actions taken in the course of discharging their supervisory responsibilities, provided that the action or decision was not taken in bad faith or illegally.

2.3 Procedures regarding the appointment and dismissal of the head of the supervisor and members of its governing body (if such a governing body exists) are transparent.

2.3.1 Public procedures regarding the appointment and dismissal of the head of the supervisor enhance independence, as they limit the potential for government interference in the management of the supervisor. Those procedures should be codified in legislation.

2.3.2 Those procedures should disclose, for example, who appoints the head of the supervisor and members of the governing body, the length of those appointments and the reasons for which the head of the supervisor or members of the governing body can be dismissed before the end of their term, if applicable.

2.3.3 Legislation should disclose the general criteria for appointing members of a governing body, including that they possess relevant qualifications, knowledge and experience to oversee the activities of the supervisor, as well as the mechanism for their remuneration (for example, salary, daily allowance or voluntary work). The procedures regarding the appointment of the members of the governing body should result in a balance of skills, knowledge and experience amongst the members of the governing body as a whole.
Accountability

2.4 The supervisor has effective internal governance structures, processes and procedures to preserve the integrity of its actions and decisions and to enable it to account to its stakeholders.

2.4.1 A well-defined internal governance structure and strong internal governance processes support the accountability and integrity of the supervisor. The supervisor’s internal governance includes its organisational structure and management arrangements, lines of responsibility, and systems of risk management and internal controls. In this context, integrity refers to the supervisor always acting with probity, respectability and lawfulness, and within the bounds of its delegated authority.

2.4.2 Regardless of the supervisor’s governance structure, the responsibilities of the governing body, the responsibilities of Senior Management, communication channels and decision making authorities, including delegation thereof, should be documented in writing to facilitate compliance with internal controls, including proper authorisation of actions taken by or on behalf of the supervisor. In addition, well-defined communication channels help ensure prompt escalation of significant issues to appropriate levels within the supervisor.

2.4.3 The supervisor should have a process to develop and implement a strategic plan that sets out its goals and priorities, given the responsibilities and objectives assigned to it by legislation. Such a plan should cover a specific period of time, such as two or three years. The supervisor should report on its performance against that plan to the government and other stakeholders, including insurance industry participants, consumers and the general public.

2.4.4 The supervisor should identify the individual or group of individuals responsible for the implementation and review of the internal governance arrangements. The internal governance processes and procedures should be subject to regular independent review, for example by an internal audit function or a public auditor.

2.5 The supervisor applies requirements and supervisory procedures consistently and equitably.

2.5.1 The supervisor should have internal mechanisms to help ensure that it is consistent in the actions and decisions it takes.

2.5.2 Cases where circumstances are similar should lead the supervisor to take similar actions or decisions. Actions taken in a particular case in the past should be considered in new cases where the circumstances are similar, unless a change in the requirements or supervisory procedures occurred in the time between the two cases.

2.6 There are processes to appeal against supervisory decisions which do not unduly impede the ability of the supervisor to make timely interventions in order to protect policyholders’ interests or contribute to financial stability.

2.6.1 Procedural fairness enhances public confidence in the supervisory process. Parties subject to a decision made by the supervisor should be able to receive the written reasons for the decision and to appeal the
decision to an impartial review body or tribunal. The manner in which the supervisor’s decision could be subject to judicial review, or in which decisions can be appealed, should be defined and transparent, and included in the notification of the decision.

2.6.2 The existence of an appeal or review mechanism helps ensure that the supervisor’s decisions are made within the law as consistently as possible and are well reasoned. Appeal processes should be specific and balanced to preserve supervisory independence and effectiveness. However, these processes should allow the supervisor to exercise its powers quickly in cases where expeditious action is required. In certain cases, these processes may provide that the decision of the supervisor remains in force until the appeal or review mechanism has produced a final decision on the appeal, unless otherwise ordered by a court.

2.7 The supervisor, including its staff and any third party acting on its behalf (presently or in the past), are required by legislation to protect confidential information in the possession of the supervisor.

2.7.1 The type of information that the supervisor is required to keep confidential should be specified in legislation. Generally, any non-public information received relating to a supervised entity would be considered confidential, as well as information received from another supervisor (see ICP 3 Information Sharing and Confidentiality Requirements). Legislation should also specify the circumstances under which the supervisor is allowed to disclose confidential information and to whom it can be disclosed.

2.7.2 The supervisor should protect confidential information. Safeguards should apply to information maintained in any format, including in physical form as well as electronic. The supervisor should assess the sensitivity of various categories of information in its possession, and identify the appropriate data protection requirements applicable to each category, including the duration of the retention period for information in each category.

2.7.3 The supervisor and its staff, including former staff, and all persons acting on its behalf (presently or in the past) should be liable to penalties for unlawful access to, use of, or disclosure of, confidential information. This includes any outside experts hired by the supervisor and persons to which the supervisor outsourced any supervisory function. The penalties for such conduct should be specified in legislation and may include disciplinary actions, up to and including termination of employment, and criminal or legal proceedings. The duty of confidentiality should survive the termination of employment of a staff member or other third party engaged by the supervisor.

Transparency

2.8 The supervisor is transparent to the public, supervised entities and the government about how it exercises its responsibilities.

2.8.1 Transparency reinforces accountability of supervisors. The supervisor should publish information about itself and the insurance sector, including:
• its objectives and responsibilities;
• its goals and priorities for the future;
• its activities in light of its goals and priorities in the previous year;
• its resources, including human, technological and financial;
• data and analysis about the state of the insurance sector; and
• supervisory measures taken in relation to problem or failed insurers, subject to confidentiality considerations and in so far as it does not jeopardise other supervisory objectives or prejudice another case pending before the supervisor.

2.8.2 The supervisor should seek to publish a report at least annually that contains the elements listed above as well as its audited financial statements. This type of report is a key document by which a supervisor accounts to its stakeholders.

2.9 The supervisor publishes its requirements, policies and supervisory procedures. The supervisor consults publicly on significant changes that it makes to requirements, policies and supervisory procedures.

2.9.1 The supervisor publishes and regularly reviews requirements, policies and supervisory procedures to ensure they remain appropriate for the characteristics of the industry, emerging risks and evolving international standards. Some requirements may be contained in primary legislation, while others may be contained in instruments issued by the supervisor, such as guidance and industry advice. The supervisor should ensure these instruments are made available to the public, for example on the supervisor’s website.

2.9.2 A critical element of transparency is for the supervisor to provide the opportunity for meaningful public consultation on proposed requirements and supervisory procedures. Meaningful public consultation benefits from participation by a diversity of stakeholders. Consequently, the supervisor should have methods in place to encourage and solicit stakeholder participation.

2.9.3 The supervisor should have written procedures on the types of documents that are subject to public consultation as well as the process and timelines for consultation. Some documents used in the supervisory process may not be suitable for consultation, such as detailed procedural manuals that are used to guide staff of the supervisor in the performance of their day-to-day duties.

2.9.4 In some jurisdictions, the development and issuance of requirements may be outside of the control of the supervisor; for example, the power to enact legislation may be vested in another government body or supranational bodies that have a direct role in the legislation in force in their member countries. In such cases, the consultation process may also be outside the remit of the supervisor. To the extent possible, the supervisor should be involved in the development of the requirements, for example, by participating in consultations, and the supervisor should keep the public and the industry informed of proposed changes.
**Resources**

2.10 The supervisor has sufficient resources, including human, technological and financial resources, to enable it to conduct effective supervision.

2.10.1 The supervisor’s financial resources and staffing policies should enable it to attract and retain highly skilled, competent and experienced staff with the necessary professional qualifications, where required. The supervisor should have the ability to hire or contract the services of external experts when necessary.

2.10.2 The supervisor should have a process for regularly reviewing its human resources needs, the skills and experience of existing staff and its projected human resource requirements over the short to medium term.

2.10.3 This review could lead the supervisor to implement initiatives to bridge gaps in numbers and/or skills. These could include more flexible hiring policies or schemes for secondment of staff from industry or other supervisory authorities within the jurisdiction or internationally. These initiatives may help in providing access to specialist skills on a temporary basis. Secondments for supervisory staff to industry or other supervisory authorities enhance the skills and experience of staff particularly to better understand industry practices. When implementing such initiatives, the supervisor should have safeguards in place to avoid conflicts of interest and protect confidential information, such as by restricting access to certain information.

2.10.4 The supervisor should provide adequate training opportunities for its staff to ensure that their skills and supervisory practices remain up to date with evolving supervisory and regulatory developments and changes in the industry.

2.10.5 The technological resources available to the supervisor should enable supervisory staff to collect and store securely, quickly access, and efficiently analyse information about the entities it supervises.

2.11 Where the supervisor outsources supervisory activities to third parties, the supervisor:

- sets expectations for their role and work;
- monitors their performance;
- ensures their independence from the supervised entity or any other related party; and
- subjects them to the same confidentiality rules and professional standards as the staff of the supervisor.

2.11.1 Outsourcing of selected supervisory activities to third parties can complement the supervisor’s resources with valuable expertise. However, supervisory activities are primarily the responsibility of the supervisor. The supervisor should retain accountability for and oversight of any outsourced activities to the same degree as non-outsourced activities. Outsourcing should not adversely affect the supervisor’s ability to conduct effective supervision or meet its objectives.

2.11.2 The process used to select third party providers should be fair, open and transparent. All qualified third party providers should have equal access
to information regarding the process. Prior to engaging a third party, the supervisor should assess the proposed provider’s competence and experience and the safeguards for the handling of data, including treatment of confidential information. The decision to select a provider should be made free from conflicts of interest, or where such conflicts cannot be avoided, they should be managed.

2.11.3 A written agreement should govern the relationship between the supervisor and the third party provider. The agreement should describe all material aspects of the outsourcing arrangement, including the services to be provided, remuneration of the third party provider, resolution of disputes and procedures governing the sub-contracting of services.
ICP 3  Information Sharing and Confidentiality Requirements
The supervisor obtains information from, and shares information with, relevant supervisors and authorities subject to confidentiality, purpose and use requirements.

3.1 The supervisor requests information, including non-public information, from relevant supervisors and authorities with respect to insurers.

3.1.1 Information requested by a supervisor from a relevant supervisor or authority may include:

- information on strategy, business activities and business models including prospective and recent acquisitions or disposals of insurance business;
- financial data relating to an insurer;
- organisational structure, both legal and management structure;
- information on the management and operational systems and controls used by insurers;
- information on individuals holding positions of responsibility in insurers such as Board Members, Senior Management, Key Persons in Control Functions and Significant Owners;
- information on individuals or insurers involved, or suspected of being involved, in criminal activities;
- information on any failures to comply with supervisory requirements, regulatory investigations and reviews, and on any restrictions imposed on the business activities of insurers;
- information concerning regulated entities related to the insurance group, whether undertaking insurance business or other financial business which is subject to regulation, and information concerning non-regulated entities related to the insurance group such as service companies or holding companies;
- specific information requested and gathered from a regulated entity; and
- reporting information within groups to meet group supervisory requirements, including subsidiaries and non-regulated holding companies.

3.1.2 Relevant supervisors and authorities, whether in the same or a different jurisdiction, may include:

- other insurance supervisors;
- supervisors responsible for banks and other credit institutions;
- supervisors responsible for investments, securities, pensions, financial markets and other sectors;
• authorities responsible for the recovery or resolution of insurers;
• authorities responsible for anti-money laundering or combating the financing of terrorism; and
• law enforcement agencies.

3.2 The supervisor shares information, including non-public information, with relevant supervisors and authorities at its sole discretion and subject to appropriate safeguards.

**Agreements on information sharing**

3.2.1 Supervisors and authorities are responsible for ensuring the safe handling of confidential information. Although the existence of an agreement or understanding on providing requested information may not be a prerequisite for sharing information, the supervisor is encouraged to use agreements, including memoranda of understanding (MoUs), to facilitate information sharing between relevant supervisors and authorities. Such agreements are important to information sharing among supervisors and authorities to establish a framework to facilitate the efficient exchange of confidential information and document the types of information that may be shared as well as the terms and conditions under which the information can be shared and passed on to other relevant supervisors and authorities. Such agreements may be distinguishable from coordination agreements used in supervisory colleges (see ICP 25 Supervisory Cooperation and Coordination).

3.2.2 The supervisor should use bilateral or multilateral agreements to facilitate information sharing because they provide the basis for a two-way flow of information and the basis for confidential treatment of the information shared. The IAIS MMoU is an example of a multilateral memorandum of understanding for cooperation and exchange of information between supervisors related to the supervision of insurance legal entities and insurance groups. All signatories to the IAIS MMoU undergo a validation of their laws and regulations to demonstrate compliance with the MMoU’s strict confidentiality regime. For this reason, if all relevant parties are signatories to the IAIS MMoU, it is the preferred framework for multilateral information exchange.

**Information Sharing in Supervisory Colleges**

3.2.3 Supervisory colleges can provide a framework for supervisory cooperation and crisis management in which information sharing between involved supervisors occurs on an ongoing basis.

3.2.4 Information sharing is particularly important for the operation of a supervisory college. For a supervisory college to be effective there needs to be mutual trust and confidence among supervisors, particularly in relation to exchange and protection of confidential information.

3.2.5 Each member of the college should take measures necessary to avoid the unintentional divulgence of information or the unauthorised release of confidential information. It is important that appropriate information exchange agreements or other arrangements are in place between the
members of the supervisory college to ensure that information can be exchanged in a secure environment.

3.2.6 Where confidential information exchanged within a supervisory college is communicated to relevant supervisors or authorities who are not involved in the college, supervisors should:

- have a formal mechanism in place between the group-wide supervisor and the other supervisors or authorities to ensure the protection of the confidential information. Such mechanisms could be included in the relevant information sharing agreements; and
- obtain the prior consent of the supervisor having provided such information.

3.3 The supervisor requesting confidential information (the requesting supervisor) has a legitimate interest and valid supervisory purpose related to the fulfilment of its supervisory functions in seeking information from another relevant supervisor or authority.

3.3.1 A legitimate interest is derived from the powers and responsibilities the requesting supervisor has in relation to the subject matter of the request. For example:

- if the requesting supervisor only has the power and responsibility to supervise intermediaries and not insurers, it may not have a legitimate interest in requesting information relating to an insurer; or
- if the requesting supervisor requests information relating to an insurer that has no current or planned operations or other connections to the requesting supervisor’s jurisdiction, it may not have a legitimate interest in requesting such information.

3.3.2 A valid supervisory purpose is relevant to the requesting authority’s performance of a supervisory task. Valid supervisory purposes may include information requested for the purposes of:

- licensing;
- suitability criteria;
- intra-group transactions such as loans and extensions of credit, parental guarantees, management agreements, service contracts, cost-sharing arrangements, reinsurance agreements, dividends and distributions;
- prevention of financial crime, such as fraud, anti-money laundering or combating the financing of terrorism;
- ongoing supervision, including preventive and corrective measures and sanctions; and
- exit from the market and resolution.

3.3.3 A supervisor may voluntarily provide information to other relevant supervisors so as to better enable the supervisors’ fulfilment of their supervisory functions. In such cases, the supervisor providing
information should adhere to the same requirements as though the information had been requested by a requesting supervisor.

3.4 The supervisor that has received a request for confidential information (the requested supervisor) from another relevant supervisor or authority:

- assesses each request for information on a case-by-case basis; and
- responds to requests in a timely and comprehensive manner.

3.4.1 In principle, the requested supervisor is expected to share information with a requesting supervisor with a legitimate interest and for a valid supervisory purpose.

3.4.2 In deciding whether and to what extent to fulfil a request for information, the requested supervisor may take into account matters including:

- the nature of the information to be provided;
- the purpose for which the information will be used;
- the ability of the requesting supervisor or authority to maintain the confidentiality of any information received, taking account of the IAIS MMoU or other existing agreements in each jurisdiction;
- whether, in the context of supervisory college or otherwise, the request is covered by a coordination agreement;
- whether it would be contrary to the interest of the jurisdiction of the requested supervisor; and
- relevant laws and regulations in each jurisdiction (in particular those relating to confidentiality and professional secrecy, data protection and privacy, and procedural fairness).

3.4.3 While requests for information should normally be made in writing, the requested supervisor should not insist on written requests in an emergency situation, and should not unreasonably delay a response to an oral request for information made for a valid supervisory purpose by a requesting supervisor.

3.4.4 The requested supervisor may receive a request for information which is not already in their possession. In such circumstances, the requested supervisor should, if it considers it reasonable, obtain that information from the insurer or other entities from which it has the power to obtain information.

3.4.5 If the requested supervisor denies a request, it should explain its reason for the denial to the requesting supervisor or authority.

3.4.6 Lack of strict reciprocity should not be used by the requested supervisor as the reason for not sharing information that would otherwise be appropriate to share, particularly in an emergency or other crisis situation. Strict reciprocity in terms of the level, format and detailed characteristics of information requested is not required.

3.5 The requesting supervisor uses confidential information received from the requested supervisor or authority only for the purposes specified when the
information was requested. Unless otherwise agreed, before using the information for another purpose or passing it on to others, the requesting supervisor obtains agreement of the requested supervisor or authority.

3.5.1 The requesting supervisor should specify the intended purposes of the information sought. Additionally, MoUs may address purposes for which the requested information may be used by the requesting supervisor.

3.5.2 The requesting supervisor first obtains agreement with the requested supervisor or authority before passing on requested information. Supervisors and authorities are encouraged to request information directly from the requested supervisor, rather than from the requesting supervisor, to provide an opportunity for direct dialogue and further consultation. Requesting supervisors should ensure that appropriate confidentiality requirements are in place and the information is only passed on to another relevant supervisor or authority with a legitimate interest and – in case of a supervisory authority – for valid supervisory purposes.

3.5.3 There are specified circumstances within the IAIS MMoU where signatories are expected to consent to the passing on of information to other relevant supervisors and authorities. This includes situations where passing on information will assist:

- other IAIS MMoU signatories in the fulfilment of their supervisory functions; and
- other relevant domestic financial sector bodies such as central banks, law enforcement agencies, relevant courts and other authorities (see Annex B of the IAIS MMoU).

3.5.4 Conditions imposed by the requested supervisor on the passing on of information to third parties should not prevent the requesting supervisor or authority from being able to use the information for its own valid supervisory purposes.

3.6 In the event the requesting supervisor has received notice of proceedings, which may legally compel it to disclose confidential information which it has received from the requested supervisor, the requesting supervisor:

- to the extent permitted by law, promptly notifies the requested supervisor; and
- where consent to disclosure is not given, uses all reasonable means to resist the demand and to protect the confidentiality of the information.

3.6.1 Where allowed by the laws and practices of the jurisdiction, a requesting supervisor required to disclose confidential information by legal compulsion should place, or seek to place, protections from disclosure on that information. Such protections could include:

- a protective order placing restrictions on use or further distribution of the confidential information; or
- limitations on the means and location of the disclosure of the confidential information.
ICP 4 Licensing

A legal entity which intends to engage in insurance activities must be licensed before it can operate within a jurisdiction. The requirements and procedures for licensing must be clear, objective and public, and be consistently applied.

Introductory Guidance

4.0.1 Licensing contributes to efficiency and stability in the insurance sector. Strict conditions governing the formal approval through licensing of insurance legal entities are necessary to protect consumers. The relevant licensing criteria should be applied to prospective entrants consistently to promote a level playing field at point of admission to the insurance sector. Licensing requirements and procedures should not be used inappropriately to prevent or unduly delay access to the market.

4.0.2 The role of the supervisor in licensing is to assess whether insurance legal entities are able to fulfil their obligations to policyholders on an ongoing basis. The licensing procedure is the first step towards achieving this objective.

4.0.3 Licensing is distinct from approval granted in terms of general domestic company, trade or commercial law. Apart from applying for a supervisory licence, other requirements pertaining to company, trade or commercial law should be met (eg filing incorporation documents or applying to the registrar of commerce).

Licensing requirements

4.1 The insurance legislation:

- includes a definition of insurance activities which are subject to licensing;
- prohibits unauthorised insurance activities;
- defines the permissible legal forms of domestic insurance legal entities;
- allocates the responsibility for issuing licences; and
- sets out the procedure and form of establishment by which foreign insurers are allowed to conduct insurance activities within the jurisdiction.

4.1.1 Jurisdictions may decide to exclude some activities from the definition of insurance activities subject to licensing. Any such activities should be explicitly stated in the legislation. Jurisdictions may do this for various reasons, such as:

- the insured sums do not exceed certain amounts;
- losses are compensated by payments in kind;
- activities are pursued following the idea of solidarity between policyholders (eg, small mutuals, cooperatives and other
community-based organisations, especially in the case of microinsurance); or

- the entities’ activities are limited to a certain geographical area, limited to a certain number or class of policyholders and/or offer special types of cover such as products not offered by licensed domestic insurance legal entities.

4.1.2 Given the principle that all entities engaged in insurance activities must be licensed, the exclusion of limited insurance activities from licensing requirements should give due regard to having appropriate alternative safeguards in place to protect policyholders.

4.1.3 Similarly, jurisdictions may allow a simplified process for non-significant entities (e.g., limited geographic scope, limited size, and limited lines of business) for the purposes of licensing. In such situations, the legislation should state clearly the applicability, requirements, and process for such authorisation.

4.1.4 In jurisdictions where an authority other than the insurance supervisor is responsible for issuing licences, the insurance supervisor should be able to give input and recommend conditions or restrictions (including refusal) on a licence where appropriate to the licensing authority.

4.2 A jurisdiction controls through licensing which entities are allowed to conduct insurance activities within its jurisdiction.

4.2.1 Entities should neither be allowed to present themselves nor act as licensed insurance legal entities without or before having been granted a licence.

4.2.2 Depending on the legal forms that are permitted in a jurisdiction, foreign insurers may be allowed to conduct insurance activities within the jurisdiction by way of a local branch or subsidiary or on a cross-border provision of services basis. A subsidiary is a domestically established legal entity that needs to be licensed. A branch is not separate from the insurance legal entity, and can be established in a jurisdiction other than the insurance legal entity's home jurisdiction. A host jurisdiction may require that branches of foreign insurance legal entities be licenced or otherwise authorised by the host supervisor. Cross-border provision of services does not require a local establishment but may require authorisation from the host supervisor.

4.2.3 In some regions, a number of jurisdictions have agreed to a system of passporting as a manner of acknowledging each other's licences. This provides the opportunity for insurance legal entities established in one of the jurisdictions to open branches or provide insurance services across borders on the basis of their home jurisdiction authorisation to conduct insurance activities. Where a foreign insurer may be allowed to operate through a branch or cross-border provision of services without a licence or other authorisation from the host supervisor, it is important that bilateral or multilateral agreements are in place which ensure that the insurer:

- is subject to supervision in its home jurisdiction which has been recognised as adequate by the host jurisdiction; and
may be subject to sanction or other supervisory measures if it does not meet the legal provisions of the host jurisdiction. In such circumstances, the home supervisor should be informed.

4.3 Licensing requirements and procedures are clear, objective and public, and are consistently applied. The applicant is required at least to:

- have sound business and financial plans;
- have a corporate or group structure that does not hinder effective supervision;
- establish that the applicant’s Board Members, both individually and collectively, Senior Management, Key Persons in Control Functions and Significant Owners are suitable;
- have an appropriate governance framework; and
- satisfy capital requirements.

4.3.1 In addition to being publicly available, licensing requirements should also be easily accessible. Supervisors should issue guidelines on how to file an application for a licence, which include advice on the required format of documents and the expected time it would take to process an application upon the receipt of all relevant documents.

4.3.2 Supervisors should assess the applicant’s business and financial plans to ascertain that the proposed business lines will be soundly managed and adequately capitalised. Business and financial plans should be projected for a minimum of three years by the applicant and include information such as the products to be offered, distribution methods and channels to be used, risk profile, projected setting-up and development costs by business line, capital requirements and solvency margins. Information regarding insurance and reinsurance should also be provided.

4.3.3 Where the applicant is part of a group, the applicant should submit its corporate and group structure, indicating all of the material entities within the group (including both insurance legal entities and other entities, including non-regulated entities). Information on the type of related party transactions and/or relationships between all material entities within the group should also be provided.

4.3.4 The applicant should also provide information to demonstrate the appropriateness of its systems of risk management and internal controls, including contracts with affiliates, outsourcing arrangements, information technology systems, policies and processes.

4.3.5 If applying to be licensed to underwrite both life insurance business and non-life insurance business (where such is allowed), the applicant should demonstrate to the satisfaction of the supervisor that its systems of risk management and internal controls are adequate to manage the risks separately for each business stream.

4.3.6 Further guidance on suitability, governance and capital requirements can be found in ICP 5 (Suitability of Persons), ICP 7 (Corporate Governance), ICP 8 (Risk Management and Internal Controls) and ICP 17 (Capital Adequacy).
Requirements on the supervisor

4.4 The supervisor assesses applications, makes decisions and informs applicants of the decision within a reasonable time, which is clearly specified, and without undue delay.

4.4.1 The supervisor should require a legal entity to submit an application if it proposes to conduct insurance activities. The application should include information on the types of business to be written and contain all the documents and information required by the legislation to confirm that the licensing requirements are met.

4.4.2 In instances where the application is deemed not complete, the supervisor should inform the applicant without delay, and the applicant should be given the opportunity to provide additional information to complete the application.

4.4.3 In assessing the application, the supervisor could rely on audits by external bodies, actuarial reports, or in the case of branches or foreign subsidiaries on the opinion of other supervisors. Supervisors should consider the reports or opinions from these various sources carefully and apply their own judgment in making the final decision on the application. Before placing reliance on reports from external auditors or actuaries, supervisors should consider:

- whether the external auditors and actuaries have the necessary expertise and experience to perform the roles; and
- their independence from the legal entity and the consideration they give to the protection of policyholders’ interests.

4.4.4 The supervisor should make its assessment and finalise its decision within a reasonable timeframe and without undue delay. A time period should be indicated to the applicant for the assessment procedure, commencing from the date on which all complete application documentation has been submitted to the supervisor. Within this period, the supervisor should decide on the acceptability of the application for a licence. However, this does not preclude the supervisor from conducting additional due diligence if necessary. If the supervisor has not come to a decision within the indicated timeframe and the licence cannot be granted, the supervisor should communicate the reason for the delay to the applicant.

4.5 The supervisor refuses to issue a licence where the applicant does not meet the licensing requirements. Where the supervisor issues a licence, it imposes additional requirements, conditions or restrictions on an applicant where appropriate. If the licence is denied, conditional or restricted, the applicant is provided with an explanation.

4.5.1 In general, requirements, conditions or restrictions that are imposed on an applicant at the point of issue of the licence deal with the scope of activities that an insurance legal entity is permitted to conduct or the nature of its customers (eg retail versus sophisticated customers). If necessary, the supervisor should impose additional requirements, conditions or restrictions on an applicant not only at the point of issue of the licence, but also as part of its ongoing supervision of the insurance
legal entity (see ICP 9 (Supervisory Review and Reporting) and ICP 10 (Preventive Measures, Corrective Measures and Sanctions).

4.5.2 The denial of a licence or conditions or restrictions on a licence should be confirmed in writing to the applicant. The explanation should be provided to the applicant in a transparent manner. Supervisors should convey their concerns with regard to an applicant's proposed insurance activities and explain the reasons for imposing licensing conditions or restrictions.

4.6 A licence clearly states its scope.

4.6.1 A licence should clearly state the classification of insurance activities that the insurance legal entity is licensed to conduct. Regarding classification, legislation should categorise insurance business into types and classes of insurance (at least into life and non-life).

4.6.2 Before adding new classes of insurance to the list of classes already granted to the insurance legal entity, the supervisor should consider all of the above mentioned licensing requirements, as applicable.

4.7 The supervisor publishes a complete list of licensed insurance legal entities and the scope of the licences granted.

4.7.1 The supervisor should publish the complete list of licensed insurance legal entities and clearly state the scope of licence that has been granted to each insurance legal entity. This would provide clarity to the public as to which entities are licensed for specific classes of business.

4.7.2 If the conditions or restrictions to the license would impact the public or any person dealing with the insurance legal entity, the supervisor should either publish these conditions or restrictions or require the insurance legal entity to disclose these conditions or restrictions accordingly. Conditions or restrictions that would impact the public could include, for example, the lines or classes of insurance business an insurance legal entity is permitted to conduct.

Foreign operations

4.8 In deciding whether and if so on what basis, to license or continue to license a branch or subsidiary of a foreign insurer in its jurisdiction, the supervisor consults the relevant supervisor(s) as necessary.

4.8.1 As part of the consultation, supervisors should use the modes available for supervisory cooperation, in particular, the ability to exchange information relevant for the application (eg check of suitability of directors and owners) with domestic or foreign authorities. The exchange of information may be governed by law, agreement or memorandum of understanding, especially if the information is deemed confidential. Having such arrangements in place is important so as to not unduly delay the processing of an application.

4.8.2 Before making a decision to grant the licence, the host supervisor should have an understanding of how the home supervisor supervises the insurer on an ongoing basis.

4.8.3 Host supervisors should consult home supervisors on relevant aspects of any licensing proposal, but in any event they should always consider
checking that the home supervisor of the insurance legal entity has no objection before granting a licence. The home supervisor should assess the risks posed to the insurer of establishing an insurance legal entity in a foreign jurisdiction and highlight any material reservations or concerns to the host supervisor as soon as practicable. The host supervisor should inform the home supervisor of the scope of the licence, including any restrictions or prohibitions imposed on the licence.

4.8.4 Host supervisors should reject applications for a licence from foreign entities which are not subject to regulation and supervision in the home jurisdiction. In the case of joint ventures, if there is lack of clear parental responsibility, the supervisor should reject such applications.

4.9 Where an insurance legal entity is seeking to conduct cross-border insurance activities without a physical presence in the jurisdiction of the host supervisor, the host supervisor concerned consults the home supervisor, as necessary, before allowing such activities.

4.9.1 Jurisdictions or regions may have a system or cooperation agreements in place whereby such consultation is not necessary or required.

4.9.2 Information exchanged as part of a consultation should include:

- confirmation from the home supervisor that the insurance legal entity is authorised to conduct the proposed types of insurance activities; and
- confirmation from the home supervisor that the insurance legal entity meets all the insurance regulatory requirements in the home jurisdiction.
ICP 5  

Suitability of Persons

The supervisor requires Board Members, Senior Management, Key Persons in Control Functions and Significant Owners of an insurer to be and remain suitable to fulfil their respective roles.

5.1 Legislation identifies which persons are required to meet suitability requirements. The legislation includes at least Board Members, Senior Management, Key Persons in Control Functions and Significant Owners.

5.1.1 Suitability requirements may extend to other individuals (eg financial controllers and treasurers) to account for the roles of such individuals that may differ depending on the jurisdiction and the legal form and governance structure of the insurer.

5.2 The supervisor requires that in order to be suitable to fulfil their roles:

- Board Members (individually and collectively), Senior Management and Key Persons in Control Functions possess competence and integrity; and
- Significant Owners possess the necessary financial soundness and integrity.

Suitability requirements for Board Members, Senior Management and Key Persons in Control Functions

5.2.1 Competence is demonstrated generally through the level of an individual’s professional or formal qualifications and knowledge, skills and pertinent experience within the insurance and financial industries or other businesses. Competence also includes having the appropriate level of commitment to perform the role. Refer to ICP 7 (Corporate Governance) with regard to competence and commitment and to ICP 8 (Risk Management and Internal Controls) with regard to control functions.

5.2.2 Integrity is demonstrated generally through character, personal behaviour and business conduct.

5.2.3 The supervisor should require the insurer to take the necessary measures to ensure that these requirements are met by setting high internal standards of ethics and integrity, promoting sound corporate governance and requiring that these individuals have pertinent experience, and maintain a sufficient degree of knowledge and decision making ability.

5.2.4 To ensure an appropriate level of suitability, Board Members, Senior Management and Key Persons in Control Functions should acquire, maintain and enhance their knowledge and skills to fulfil their roles, for example, by participating in induction and ongoing training on relevant issues. Sufficient time, budget and other resources should be dedicated for this purpose, including external expertise drawn upon as needed. More extensive efforts should be made to train those with more limited financial, regulatory or risk-related experience.
CF 5.2.a The group-wide supervisor requires the IAIG Board Members (individually and collectively), Senior Management, and Key Persons in Control Functions, to have the necessary competence to fulfil their role, taking into account the complexity and international nature of the IAIG, any specific features of the jurisdictions where the IAIG operates, and the risks to which it is exposed.

CF 5.2.a.1 Appropriate competencies include, for example, knowledge of and experience with international business and processes, as well as with different business models.

Suitability requirements for Significant Owners

5.2.5 The necessary qualities of a Significant Owner relate at least to:

- financial soundness demonstrated by sources of financing/funding and future access to capital; and
- integrity demonstrated in personal or corporate behaviour.

5.3 The supervisor requires the insurer to demonstrate initially and on an ongoing basis, the suitability of Board Members, Senior Management, Key Persons in Control Functions and Significant Owners. The suitability requirements and the extent of review required by the supervisor depend on the person's role.

5.3.1 The supervisor should assess the suitability of Board Members, Senior Management, Key Persons in Control Functions and Significant Owners of an insurance legal entity as part of the licensing procedure before the insurance legal entity is permitted to operate (see ICP 4 Licensing).

5.3.2 The supervisor should assess the suitability of Board Members, Senior Management, Key Persons in Control Functions and Significant Owners of insurers either prior to changes in the positions or as soon as possible after appointment. The supervisor should also require the insurer to perform internal suitability assessments of Board Members, Senior Management and Key Persons in Control Functions on an ongoing basis, for example on an annual basis or when there are changes in the circumstances of the individuals. The supervisor may require the insurer to certify that it has conducted such assessments and demonstrate how it reached its conclusions.

5.3.3 With regard to Control Functions, the individual(s) to be assessed should be the Key Persons in Control Functions.

5.3.4 The supervisor should have sufficient and appropriate information to assess whether an individual meets suitability requirements. The information to be collected and the supervisor’s assessment of such information may differ depending on the role.

5.3.5 For the purpose of the assessment, the supervisor should require the submission of a résumé or similar indicating the professional qualifications as well as previous and current positions and experience of the individual and any information necessary to assist in the assessment, such as:
• evidence that the individual has sufficient relevant knowledge and pertinent experience within the insurance and financial industries or other businesses; and
• evidence that the individual has the appropriate level of commitment to perform the role.

5.3.6 The application of suitability requirements relating to competence for Board Members, Senior Management and Key Persons in Control Functions of an insurer may vary depending on the degree of their influence and on their roles. It is recognised that an individual considered competent for a particular position within an insurer may not be considered competent for another position with different responsibilities or for a similar position within another insurer. When assessing the competence of the Board Members, regard should be given to respective duties allocated to individual members to ensure appropriate diversity of qualities and to the effective functioning of the Board as a whole.

5.3.7 In assessing the integrity of an individual Board Member, Senior Management, Key Person in Control Functions and Significant Owner, the supervisor should consider a variety of indicators such as:

• Legal indicators: These provide information on possible legal misconduct. Such indicators could include civil liability, criminal convictions or pending proceedings:
  o for breaches of law designed to protect members of the public from financial loss, eg dishonesty, or misappropriation of assets, embezzlement and other fraud or other criminal offences (including anti-money laundering and the combating of the financing of terrorism.
  o against the individual in his/her personal capacity;
  o against a legal entity in which the individual is or was a Board Member, a member of the Senior Management, a Key Person in Control Functions or a Significant Owner; or
  o incurred by the individual as a consequence of unpaid debts.

• Financial indicators: These provide information on possible financial misconduct, improper conduct in financial accounting, or negligence in decision-making. Such indicators could include:
  o financial problems or bankruptcy in his/her private capacity; or
  o financial problems, bankruptcy or insolvency proceedings of a legal entity in which the individual is or was a Board Member, a member of the Senior Management or a Key Person in Control Functions.

• Supervisory indicators: These provide information gathered by or that comes to the attention of supervisors in the performance of their supervisory duties. These supervisors could also be authorities with supervisory responsibility in sectors other than insurance. Such indicators could include:
the withholding of information from public authorities or submission of incorrect financial or other statements;

- conduct of business transgressions;

- prior refusal of regulatory approval for key positions;

- preventive or corrective measures imposed (or pending) on entities in which the individual is or was a Board Member, a member of the Senior Management, or a Key Person in Control Functions; or

- outcome of previous assessments of suitability of an individual, or sanctions or disciplinary actions taken (or pending) against that individual by another supervisor.

- Other indicators: These may provide other information that could reasonably be considered material for the assessment of the suitability of an individual. Examples include:

  - suspension, dismissal or disqualification of the individual from a position as a Board Member or a member of the Senior Management of any company or organisation;

  - disputes with previous employers concerning incorrect fulfilment of responsibilities or non-compliance with internal policies, including code of conduct, employment law or contract law;

  - disciplinary action or measures taken against an individual by a professional organisation in which the individual is or was a member (e.g., actuaries, accountants or lawyers); or

  - strength of character, such as the ability and willingness to challenge, as an indicator of a person’s integrity as well as competence to perform the respective role.

The presence of any one indicator may, but need not in and of itself, determine a person’s suitability. All relevant indicators, such as the pattern of behaviour, should be considered in a suitability assessment. Consideration should also be taken to the lapse of time since a particular indicator occurred and its severity, as well as the person’s subsequent conduct.

5.3.8 For Significant Owners, the supervisor sets out minimum standards of financial soundness. If the Significant Owner that is to be assessed is a legal person or a corporate entity, the supervisor should collect sufficient and appropriate information such as:

- the nature and scope of its business;

- its ownership structure, where relevant;

- its source of finance/funding and future access to capital;

- the group structure, if applicable, and organisation chart; and

- other relevant factors.

5.3.9 In determining the financial soundness of Significant Owners, the supervisor should assess their source of financing/funding and future
access to capital. To do so, the supervisor may consider financial indicators such as:

- Financial statements and exhibits. If the Significant Owner is a legal person, financial statements may include annual financial statements; for a natural person, it may include financial information (such as tax accounts or personal wealth statements) that are reviewed by an independent public accountant; and

- Transactions and agreements such as: loans; investments; purchase, sale or exchange of securities or other assets; dividends and other distributions to shareholders; management agreements and service contracts; and tax allocation agreements.

5.3.10 Additionally the supervisor should also consider matters such as, whether:

- Significant Owners understand their role as potential future sources of capital, if needed;
- there are any indicators that Significant Owners will not be able to meet their debts as they fall due;
- appropriate prudential solvency requirements are met if the Significant Owner is a financial institution;
- Significant Owners have been subject to any legally valid judgment, debt or order that remains outstanding or has not been satisfied within a reasonable period;
- Significant Owners have made arrangements with creditors, filed for bankruptcy or been adjudged bankrupt or had assets sequestered; and
- Significant Owners have been able to provide the supervisor with a satisfactory credit reference.

The presence of any one indicator may, but need not in and of itself, determine a person’s suitability. All relevant indicators, such as the pattern of behaviour, should be considered in a suitability assessment. If the Significant Owner is regulated by another supervisor, the suitability assessment done by the latter may be relied upon to the extent that this assessment reasonably meets the requirements of this standard.

5.4 The supervisor requires notification by insurers of any changes in Board Members, Senior Management, Key persons in Control Functions and Significant Owners, and of any circumstances that may materially adversely affect the suitability of its Board Members, Senior Management, Key Persons in Control Functions and Significant Owners.

5.4.1 Insurers should be required to report promptly any information gained about these persons that may materially affect their suitability, for example, if a Board Member is convicted of a financial crime. See guidance under Standard 5.3 for additional examples of indicators of circumstances that may materially affect the suitability of an individual.
5.5 The supervisor takes appropriate action to rectify the situation when Board Members, Senior Management and Key Persons in Control Functions or Significant Owners no longer meet suitability requirements.

5.5.1 The supervisor should impose measures in respect of Board Members, Senior Management and Key Persons in Control Functions who do not meet the suitability requirements. Examples of such measures include:

- requesting the insurer to provide additional education, coaching or the use of external resources in order to achieve compliance with suitability requirements by an individual in a position as Board Member, member of the Senior Management or Key Person in Control Functions;
- preventing, delaying or revoking appointment of an individual in a position as Board Member, member of the Senior Management or Key Person in Control Functions;
- suspending, dismissing or disqualifying an individual in a position as a Board Member, Senior Management or Key Person in Control Function, either directly or by ordering the insurer to take these measures;
- requiring the insurer to appoint a different person for the position in question who does meet the suitability requirements, to reinforce the sound and proper management and control of the insurer;
- imposing additional reporting requirements and increasing solvency monitoring activities; or
- withdrawing or imposing conditions on the business licence, especially in the case of a major breach of suitability requirements, taking into account the impact of the breach or the number of members of the Board, Senior Management or Key Persons in Control Functions involved.

5.5.2 The supervisor should impose measures of a preventive and corrective nature in respect of Significant Owners who do not meet suitability requirements. Examples of such measures include:

- requiring the Significant Owners to dispose of their interests in the insurer within a prescribed period of time;
- the suspension of the exercise of their corresponding voting rights; or
- the nullification or annulment of any votes cast by the Significant Owners.

5.5.3 There can be circumstances where a Board Member, a member of the Senior Management or a Key Person in Control Functions is unable to carry out his/her role and a replacement needs to be appointed on short notice. In jurisdictions where the supervisor approves the post-licensing appointment of Board Members, Senior Management or Key Persons in Control Functions, it may be appropriate for the supervisor to permit the post to be filled temporarily until the successor’s suitability assessment is affirmed. In such circumstances, a supervisor may require that these
temporary replacements meet certain suitability requirements, depending on his/her position or responsibilities within the insurer. However, such assessment should be conducted and concluded in a timely manner.

5.6 The supervisor exchanges information with other authorities inside and outside its jurisdiction where necessary to check the suitability of Board Members, Senior Management, Key Persons in Control Functions and Significant Owners of an insurer.

5.6.1 Supervisors should use the modes available for supervisory cooperation, in particular, the ability to exchange information relevant to check suitability with domestic or foreign authorities. Having such arrangements in place is important so as to not unduly delay relevant supervisory processes and/or affect the insurers’ ability to satisfy composition requirements for the Board or make necessary changes to its management team (see ICP 3 Information Sharing and Confidentiality Requirements).

5.6.2 The supervisor may use this information as an additional tool to assess effectively the suitability of, or to obtain information about, a Board Member, a member of the Senior Management or a Key Person in Control Functions.

5.6.3 If a Significant Owner that is to be assessed is a legal person or a corporate entity regulated in another jurisdiction, the supervisor should seek confirmation from the relevant authority that the entity is in good standing in that other jurisdiction.
ICP 6  
Change of Control and Portfolio Transfers

The supervisor assesses and decides on proposals:

- to acquire significant ownership of, or an interest in, an insurer that results in a person (legal or natural), directly or indirectly, alone or with an associate, exercising control over the insurer; and
- for portfolio transfers.

**Introductory Guidance**

6.0.1 The supervision of change of control and portfolio transfers supports supervisory objectives, in particular:

- licensing regimes are not undermined by control being obtained or retained by those who would not get a licence ordinarily; and
- insurers should continue to be held in corporate or other arrangements that allow them to be effectively supervised.

6.0.2 To assist in understanding the content of this ICP, it is emphasised that:

- change of control extends beyond the immediate controlling interest, such as the ownership of equity in an insurer, and includes other actions that have the potential to change the exercise of control over the insurer;
- change of control is relevant, both at the insurance legal entity and intermediate and ultimate beneficial owner levels;
- change of control may take place in a variety of forms, such as mergers, acquisitions or (de)mutualisations;
- control includes the exercise of influence over decisions such as those on strategic, operating, investing and financing policies of an insurer. It may also include the power to appoint or remove members, or otherwise influence the composition of, the Board or of Board committees;
- control may be exercised by a person individually, or acting in concert with associates or others, and directly or indirectly through corporate structures or other mechanisms; and
- significant owners and the transactions that determine or change control may be outside of a jurisdiction, but the impact on the ultimate control of the insurer in that jurisdiction means that they remain relevant to effective supervision of control.

6.0.3 Supervisory requirements and practices regarding change of control and portfolio transfers may vary, taking into account the nature, scale and complexity of the transactions and the risk posed to achievement of supervisory objectives. For example, portfolio transfers between reinsurers, internal restructuring transactions within a group that does not change the ultimate beneficial ownership of the entity, and demutualisation, are different types of transactions. Their nature may
warrant different supervisory approaches and/or different levels of intensity of supervision.

6.0.4 There may be transactions where a portfolio transfer or a change of control is cross-border in nature. In such cases, the supervisor should coordinate and exchange information with the relevant supervisors (see ICP 3 Information Sharing and Confidentiality Requirements and ICP 25 Supervisory Cooperation and Coordination).

**Change of Control**

6.1 Legislation addresses change of control of insurers, including:

- having a definition of control; and
- oversight and enforcement of requirements related to change of control.

6.1.1 The definition of "control" should address, at least:

- holding of a defined number or percentage of issued shares or financial instruments above a designated threshold in an insurer or its intermediate or ultimate beneficial owner or the head of the insurance group or head of the financial conglomerate as may be the case; and/or
- having a defined percentage of voting rights attached to shares or financial instruments.

6.1.2 Financial instruments other than shares that should be of interest to the supervisor are those that have the potential to impact the levels of control over an insurer, including those that may convert in the future into an interest that leads to a change of control through that conversion.

6.1.3 The definition of a threshold for control is not necessarily the same as the definition that may apply for accounting consolidation or other purposes.

6.2 The supervisor requires the insurer to provide notification of a proposed change of control of the insurer. The supervisor assesses and decides on proposals for change of control.

**Notification**

6.2.1 The supervisor should require notification of proposals that would lead to increased (or decreased) control.

6.2.2 The supervisor should establish thresholds for notification. Such thresholds may improve transparency and compliance with related requirements while avoiding immaterial notifications. The supervisor typically establishes lower thresholds (such as between 5 and 10 percent) for initial notification of acquiring control, and a higher percentage for approval and for increased control also requiring approval.

6.2.3 The supervisor may also be informed by notifications made to other authorities such as corporate law supervisors or under rules for publicly traded companies.
6.2.4 Notifications should be submitted to the supervisor in a reasonable time. Changes that arise because of actions of the insurer should be subject to advance notification. Actions of others are usually made “subject to” relevant approvals so are not effective until approved.

Assessment

6.2.5 The supervisor should assess both actions that lead to new controlling interests and those that lead to material increases in existing controlling interests. Material increases may arise, for example, when existing significant owners increase their interest, when associates increase their interest, or when a significant owner acquires a new associate who has a plan to acquire an interest (directly or indirectly) in the insurer.

6.2.6 The supervisor should obtain the information necessary to assess the change of control. The supervisor may seek such information from the insurer, its significant owners, shareholders or other relevant persons. The information obtained should be proportionate to the complexity of the change of control. Regardless, the supervisor should have sufficient information to understand the impact of the change of control on the insurer and be able to identify the ultimate beneficial owner.

6.2.7 When considering whether to approve a change of control that leads to a new significant owner, the supervisor should verify that the approval would not lead to a control arrangement that would not have been approved as part of the jurisdiction’s licensing requirements in similar circumstances (see ICP 4 Licensing).

6.2.8 The supervisor should assess whether a new significant owner is suitable to fulfil its role. A significant owner should possess at least the necessary qualities relating to financial soundness and integrity (see ICP 5 Suitability of Persons).

6.2.9 The supervisor should be able to deny a change of control when, for example, it would be prejudicial to the interests of policyholders, the resulting structure would not allow for effective supervision, or the ultimate beneficial owner cannot be identified.

(De)Mutualisation

6.3 A change of a mutual company to a stock company, or vice versa, is subject to the supervisor’s approval.

6.3.1 In jurisdictions where mutual ownership of insurers is possible, legislation should provide a process for mutual insurers to demutualise at their own discretion or if directed to do so by the supervisor.

6.3.2 The process for (de)mutilisation may vary by jurisdiction. For example, the ultimate approval may be provided by authorities other than the supervisor, such as courts or votes of member policyholders. Regardless, the supervisor should be consulted and should have the right to object to a (de)mutilisation.

6.3.3 In assessing a (de)mutilisation, the supervisor should consider the impact on the financial condition of the insurer and the ongoing expectations of policyholders, including those that will continue as participating policyholders. The supervisor should also assess whether
the new governing organisational document of the company adequately protects current and future policyholders.

**Portfolio Transfer**

6.4 The supervisor assesses and decides on the transfer of all or a part of an insurer's business portfolio taking into account at least the financial condition of the transferee and the transferor and whether the interests of the policyholders of both the transferee and transferor will be protected.

6.4.1 Insurance policies are legal contracts between an insurer and its policyholders. As such, an insurer should not be able unilaterally to alter the terms of a contract by merging with another insurer, (de)mutualising, or transferring some of its business to another insurer.

6.4.2 In order to protect the interests of policyholders and to safeguard the financial condition of the insurers involved, legislation should address the conditions for a portfolio transfer. Policyholders' benefit expectations and existing policy values should not normally be lessened as a result of a portfolio transfer.

6.4.3 The process for a portfolio transfer may vary by jurisdiction. For example, the ultimate approval may be provided by authorities other than the supervisor, such as courts. Regardless, the supervisor should be consulted and should have the right to object to a portfolio transfer.

6.4.4 When assessing a transfer, the supervisor should consider the impact on the transferring policyholders, as well as on those that are not transferring, and those that are current policyholders of the company to which the policyholders are being transferred. This should apply whether the portfolio transfer is considered a part of normal business, a merger or part of a resolution where the insurer is no longer viable (see ICP 12 Exit from the Market and Resolution).
ICP 7  Corporate Governance
The supervisor requires insurers to establish and implement a corporate governance framework which provides for sound and prudent management and oversight of the insurer’s business and adequately recognises and protects the interests of policyholders.

Introductory Guidance
7.0.1 The corporate governance framework of an insurer:
- promotes the development, implementation and effective oversight of policies that clearly define and support the objectives of the insurer;
- defines the roles and responsibilities of persons accountable for the management and oversight of an insurer by clarifying who possesses legal duties and powers to act on behalf of the insurer and under which circumstances;
- sets requirements relating to how decisions and actions are taken including documentation of significant or material decisions, along with their rationale;
- provides sound remuneration practices which promote the alignment of remuneration policies with the long term interests of insurers to avoid excessive risk taking;
- provides for communicating with the supervisor, as appropriate, matters relating to the management and oversight of the insurer; and
- provides for corrective actions to be taken for non-compliance or weak oversight, controls or management.

7.0.2 An effective corporate governance framework enables an insurer to be flexible and transparent; to be responsive to developments affecting its operations in making timely decisions and to ensure that powers are not unduly concentrated. The corporate governance framework supports and enhances the ability of the key players responsible for an insurer’s corporate governance; ie the Board, Senior Management and Key Persons in Control Functions to manage the insurer's business soundly and prudently.

Organisational structures
7.0.3 The insurer should establish a transparent organisational structure which supports the strategic objectives and operations of the insurer. The Board and Senior Management should know and understand the structure and the risks that it poses.

The ways in which an insurer chooses to organise and structure itself can vary depending on a number of factors such as:
• jurisdictional corporate law, which may allow or require different Board structures (such as one-tier or two-tier Boards);
• organisational structure such as stock companies, mutuals or co-operatives; and
• group, branches, or solo legal entity operations.

These considerations can affect how an insurer establishes and implements its corporate governance framework and are explained in more detail below. It is important for supervisors to understand these different considerations in order to be able to adequately assess the effectiveness of an insurer’s corporate governance framework.

| CF 7.0.a | The group-wide supervisor requires the Head of the IAIG to document the legal and management structures of, and inter-relationships within, the IAIG to enable an understanding of its structure to help identify risks and how they are managed. |
| CF 7.0.a.1 | The documentation should mainly support the IAIG Board and Senior Management in discharging their responsibilities, but can also be useful for the group-wide supervisor. |
| CF 7.0.a.2 | The documentation covers legal entities within the IAIG and, where relevant, the wider group of which the IAIG is part, and includes items such as: |
| | • home jurisdiction of the Head of the IAIG; |
| | • the jurisdictions of legal entities within the IAIG, including branches; |
| | • off-balance sheet entities; |
| | • materiality of legal entities or business lines within the IAIG; |
| | • financial ties (such as commercial contracts) and non-financial ties (such as common directors); |
| | • details of the shareholding structure and significant shareholdings, including controlling shareholders; |
| | • governance structure, including Boards and their committee structure and key responsibilities; and |
| | • management structure, including the division of authority and decision making between business line management, local management, and Board oversight. |

7.0.4 The standards on corporate governance are designed with sufficient flexibility to apply to supervision of insurers regardless of any differences in the corporate structures and legal systems.

7.0.5 The term Board includes its management and oversight roles, regardless of Board structure.

Mutuals and co-operatives

7.0.6 Governance of insurers formed as mutuals or co-operatives is different from that of insurers formed as joint stock companies (ie, bodies
corporate). These standards are nevertheless sufficiently flexible to be adapted to mutuals and co-operatives to promote the alignment of actions and interests of the Board and Senior Management with the broader interests of policyholders. Where there are references to shareholders or stakeholders, they should be generally treated as references to policyholders in mutuals, unless otherwise indicated.

**Insurance Groups**

7.0.7 Insurance groups should ensure that the corporate governance framework is appropriate to the structure, business and risks of the insurance group and its legal entities. The corporate governance framework should include policies, processes and controls which address risks across the insurance group and legal entities, and clear reporting lines between the head of the group and the legal entities within the group.

7.0.8 When setting up or monitoring their corporate governance framework, insurance groups should evaluate the specific challenges which may arise from the organisational model adopted by a group (e.g. more centralised or more decentralised model). The main factors underlying the challenges are:

- the division of authorities and responsibilities between the key players at the insurance group and legal entity level;
- effective group-wide direction and coordination;
- proper consideration of the legal obligations, governance responsibilities and risks both at the insurance group and legal entity level; and
- effective communication within the group and adequate information at all levels (see Issues Paper on Approaches to Group Corporate Governance; Impact on Control Functions).

7.0.9 The supervisor should take the organisational structure of the group into consideration in evaluating its governance. Particularly when the management structure differs from the legal entity structure, it is not sufficient to assess governance only at the legal entity level. In such a case, it is important that appropriate governance exists across the group and that the supervisor assesses it on a group-wide basis.

| CF 7.0.b | The group-wide supervisor requires the Head of the IAIG to ensure that the group-wide corporate governance framework is appropriate to the structure, business and risks of the IAIG including its legal entities. |
| CF 7.0.c | The group-wide supervisor requires the Head of the IAIG to establish clear reporting lines between the legal entities within the IAIG and the Head of the IAIG. |

**Branch operations**

7.0.10 If an insurer is a branch, these standards would generally apply to the legal entity in its home jurisdiction. However, the host supervisor may require designated oversight and/or management accountabilities and structures to be maintained at the branch, including in some cases a
designated representative responsible for the management of the branch. In such cases, these standards should also apply, as appropriate, to the oversight and management roles maintained within the branch taking due account of the governance structures and arrangements as determined by the host supervisor.

**Appropriate allocation of oversight and management responsibilities**

7.1 The supervisor requires the insurer’s Board to:

- ensure that the roles and responsibilities allocated to the Board, Senior Management and Key Persons in Control Functions are clearly defined so as to promote an appropriate separation of the oversight function from the management responsibilities; and

- provide oversight of the Senior Management.

7.1.1 The Board should ensure that the insurer has a well-defined governance structure which provides for the effective separation between oversight and management functions. The Board is responsible for providing the overall strategy and direction for the insurer and overseeing its proper overall management, while leaving the day-to-day management of the insurer to Senior Management. The separation of the roles of the Chair of the Board and the Chief Executive Officer (CEO) reinforces a clear distinction between accountability for oversight and management.

7.1.2 The Board should also ensure that there is a clear allocation of roles and responsibilities to the Board as a whole, to committees of the Board where they exist, and to the Senior Management and Key Persons in Control Functions to ensure proper oversight and sound management of the insurer. The allocation of roles and responsibilities should clearly identify the individual and collective accountabilities for the discharge of the respective roles and responsibilities. The organisational structure of the insurer and the assignment of responsibilities should enable the Board and Senior Management to carry out their roles in an adequate and objective manner and should facilitate effective decision making.

7.1.3 The allocation of responsibilities to individual Board Members (for example the membership of Board committees such as the audit or remuneration committee) should take due account of whether the relevant member has the degree of independence and objectivity required to carry out the functions of the particular committee. The effective oversight of the executive functions should be performed by the non-executive members of the Board, because they are not involved in the day-to-day management of the insurer. Within a group the allocation and division of the oversight and management responsibilities at different levels should be transparent, appropriate for, and aligned with, the organisational model of the group. Where individuals undertake functions for more than one legal entity within a group, the group should have in place appropriate measures so that conflicts of interest between the different roles to be performed by such individuals are avoided, or where such conflicts cannot be avoided, they should be managed.

7.1.4 In order to provide effective oversight of the Senior Management, the Board should:
• ensure that there are adequate policies and processes relating to the appointment, dismissal and succession of the Senior Management, and be actively involved in such processes;

• ensure that Senior Management’s knowledge and expertise remain appropriate given the nature of the business and the insurer’s risk profile;

• monitor whether the Senior Management is managing the affairs of the insurer in accordance with the strategies and policies set by the Board, and the insurer’s risk appetite, corporate values and corporate culture;

• set appropriate performance and remuneration standards for Senior Management consistent with the long-term strategy and the financial soundness of the insurer and monitor whether the Senior Management is meeting the performance goals set by the Board;

• regularly meet with the Senior Management to discuss and review critically the decisions made, information provided and any explanations given by the Senior Management relating to the business and operations of the insurer; and

• have regular interaction with any committee it establishes as well as with other key functions, proactively request information from them and challenge that information when necessary.

7.1.5 As a part of its regular monitoring and review of the insurer’s operations, the Board should review whether the relevant policies and processes, as set by the Board, are being properly implemented by Senior Management and are operating as intended. Particular attention should be paid as to whether the responsibilities for managing and implementing the policies of the Board have been effectively discharged by those responsible. The Board should obtain reports at least annually for this purpose and such reports may include internal or external independent reports as appropriate.

CF 7.1.a The group-wide supervisor requires the IAIG Board to establish a well-defined group-wide governance structure, which promotes effective oversight of the group-wide operations independent of day-to-day management.

Corporate culture, business objectives and strategies of the insurer

7.2 The supervisor requires the insurer’s Board to set and oversee the implementation of the insurer’s corporate culture, business objectives and strategies for achieving those objectives, in line with the insurer’s long term interests and viability.

7.2.1 The Board should adopt a rigorous process for setting, approving, and overseeing the implementation of the insurer’s overall business objectives and strategies, taking into account the long term financial safety and soundness of the insurer as a whole, the interests of its
policyholders and other stakeholders, and the fair treatment of customers. The Board ensures that the Senior Management has adequately documented and communicated these objectives and strategies to the Key Persons in Control Functions and all other relevant staff.

7.2.2 The effective implementation of objectives and strategies should be supported by the corporate culture and by clear and objective performance goals and measures, taking due account of, among other things, the insurer’s long term interests and viability and the interests of policyholders and other stakeholders. The Board should review the appropriateness of the goals and measures set.

7.2.3 A corporate culture reflects the fundamental corporate values and includes norms for responsible and ethical behaviour applicable to all employees of the insurer. The Board should take the lead in setting the appropriate tone at the top. This includes adherence to the corporate values by the Board and a strong risk culture avoiding excessive risk taking. The corporate values, norms and supporting policies should be communicated throughout the insurer. These are also reflected in the insurer’s business objectives and strategies, and supported by professional standards and codes of ethics that set out what the insurer considers to be acceptable and unacceptable conduct. In this regard, the Board should take account of the interests of policyholders and other relevant stakeholders. In setting the tone at the top the Board should ensure that employees are aware that appropriate disciplinary or other actions will follow unacceptable behaviours.

7.2.4 The Board should ensure that the corporate culture promotes timely and frank discussion and escalation of problems to Senior Management or itself. The Board should set and oversee the implementation of transparent policies and processes which promote and facilitate that employees can communicate concerns or information about illegal or unethical behaviour confidentially and without reprisal directly or indirectly to the Board (e.g. whistle blower policy). The Board should determine how and by whom legitimate concerns shall be investigated and addressed (Senior Management, Board or an external party).

7.2.5 The Board should define and oversee the implementation of norms for responsible and ethical behaviour. It should not allow behaviour that would be incompatible with the protection of policyholders and that could lead to reputational risks or improper or illegal activity, such as financial misreporting, fraud, money laundering, bribery and corruption. The norms for responsible and ethical behaviour should also make clear that employees are expected to conduct themselves ethically in addition to complying with laws, regulations and the insurer’s policies.

7.2.6 The Board should ensure that the insurer’s corporate governance framework and overall business objectives and strategies are reviewed at least annually to ensure that they have been properly implemented and that they remain appropriate in light of any material changes in the organisational structure, activities, strategy, and regulatory and other external factors. The Board should ensure more frequent reviews, for instance when an insurer embarks on a significant new business initiative (e.g. a merger or acquisition, or a material change in the direction
with respect to the insurer’s product portfolio, risk or marketing strategies), upon the introduction of a new type or class of risk or product or a decision to market products to a new class or category of clients, or following the occurrence of significant external or internal events which may potentially have a material impact on the insurer (including its financial condition, objectives and strategies) or the interests of its policyholders or other stakeholders.

**CF 7.2.a** The group-wide supervisor requires the IAIG Board to ensure that the group-wide business objectives, and strategies for achieving those objectives, take into account at least the following:

- applicable laws and regulations of, and the risks which may arise from doing business in, the jurisdictions in which the IAIG operates;
- long term financial safety and soundness of the IAIG;
- the interests of policyholders and other stakeholders;
- fair treatment of customers; and
- the interests and objectives of the insurance legal entities within the IAIG.

**CF 7.2.a.1** The IAIG Board should establish processes for identifying and addressing risks to the proper implementation of the IAIG’s objectives and strategies for achieving those objectives, including any emerging risks.

**CF 7.2.a.2** The group-wide supervisor should cooperate and coordinate with the other involved supervisors to compare the consistency of the interests and objectives of the IAIG with those of the insurance legal entities within the IAIG.

**CF 7.2.b** The group-wide supervisor requires the Head of the IAIG to provide to the group-wide supervisor, at least annually, an explanation of the strategy that the IAIG Board has set for the IAIG.

**CF 7.2.b.1** An explanation of the strategy provides the group-wide supervisor with information useful for understanding of the IAIG’s corporate governance framework. The explanation of the strategy should include matters such as:

- the overall business model and its rationale;
- material business lines and how they are likely to develop;
- non-insurance business activities the IAIG is likely to pursue;
- the geographic emphasis of the IAIG and any likely changes;
- anticipated changes in market share(s);
- the consequences (financial or otherwise) of achieving, or not achieving, the strategy; and
- how the strategy ensures the IAIG will have the ability to fulfil its obligations to policyholders.
Structure and governance of the Board

7.3 The supervisor requires the insurer’s Board to have, on an ongoing basis:

- an appropriate number and mix of individuals to ensure that there is an overall adequate level of competence at the Board level commensurate with the governance structure;

- appropriate internal governance practices and procedures to support the work of the Board in a manner that promotes the efficient, objective and independent judgment and decision making by the Board; and

- adequate powers and resources to be able to discharge its duties fully and effectively.

Board composition

7.3.1 The Board of an insurer should have a sufficient number of members who have relevant expertise among them as necessary to provide effective leadership, direction and oversight of the insurer’s business to ensure it is conducted in a sound and prudent manner. For this purpose, the Board should collectively and individually have, and continue to maintain, including through training, necessary skills, knowledge and understanding of the insurer’s business to be able to fulfil their roles. In particular, the Board should have, or have access to, knowledge and understanding of areas such as the lines of insurance underwritten by the insurer, actuarial and underwriting risks, finance, accounting, the role of control functions, investment analysis and portfolio management and obligations relating to fair treatment of customers. While certain areas of expertise may lie in some, but not all, members, the collective Board should have an adequate spread and level of relevant competencies and understanding as appropriate to the insurer's business.

CF 7.3.a The group-wide supervisor requires that the collective competence of the IAIG Board includes an understanding of at least:

- the group-wide corporate governance framework and corporate structure;
- the activities of the legal entities within the IAIG, including associated risks;
- the supervisory regimes applicable to the IAIG;
- the issues that arise from cross-border business and international transactions; and
- the risk management, compliance, audit, actuarial and related areas.

CF 7.3.a.1 The IAIG Board should be capable of understanding and describing the purpose, structure, strategy, material operations, and material risks of the IAIG, including those of legal entities in other financial sectors and unregulated legal entities that are part of the group.
7.3.2 Board Members should have the commitment necessary to fulfil their roles, demonstrated by, for example, a sufficient allocation of time to the affairs of the insurer and reasonable limits on the number of Board Memberships held within or outside the insurance group.

Board effectiveness

7.3.3 The Board should review, at least annually, its own performance to ascertain whether members collectively and individually remain effective in discharging the respective roles and responsibilities assigned to them and identify opportunities to improve the performance of the Board as a whole. The Board should implement appropriate measures to address any identified inadequacies, including any training programmes for Board Members. The Board may also consider the use of external expertise from time to time to undertake its performance assessment where appropriate in order to enhance the objectivity and integrity of that assessment process.

Internal governance

7.3.4 The Board should have appropriate practices and procedures for its own internal governance, and ensure that these are followed and periodically reviewed to assess their effectiveness and adequacy. These may be included in organisational rules or by-laws, and should set out how the Board will carry out its roles and responsibilities. They should also cover a formal and documented process for nomination, selection and removal of Board Members, and a specified term of office as appropriate to the roles and responsibilities of the Board member, particularly to ensure the objectivity of decision making and judgment. Appropriate succession planning should also form part of the Board’s internal governance practices.

Chair of the Board

7.3.5 While the Board as a whole remains collectively responsible for the stewardship of the insurer, the Chair of the Board has the pivotal role of providing leadership to the Board for its proper and effective functioning. The role of the Chair of the Board should generally encompass responsibilities such as setting the Board’s agenda, ensuring that there is adequate time allocated for the discussion of agenda items, especially if they involve strategic or policy decisions of significant importance, and promoting a culture of openness and debate by facilitating effective participation of non-executive and executive members and communication between them and also with the Senior Management and Key Persons in Control Functions. To promote checks and balances, it is good practice for the Chair of the Board to be a non-executive Board member and not serve as chair of any Board committee. In jurisdictions where the Chair of the Board is permitted to assume executive duties, the insurer should have measures in place to mitigate any adverse impact on the insurer’s checks and balances.

Board committees

7.3.6 To support the effective discharge of the responsibilities of the Board, the Board should assess whether the establishment of committees of the Board is appropriate. Committees that a Board may commonly establish
include audit, remuneration, ethics/compliance, nominations and risk management committees. Where committees are appointed, they should have clearly defined mandates and working procedures (including reporting to the Board), authority to carry out their respective functions, and a degree of independence and objectivity as appropriate to the role of the committee. The Board should consider occasional rotation of members and of the chairs of committees, or tenure limits to serve on a committee, as this can help to avoid undue concentration of power and promote fresh perspectives. If the functions of any committees are combined, the Board should ensure such a combination does not compromise the integrity and/or effectiveness of the functions combined.

In all cases, the Board remains ultimately responsible for matters delegated to any such committees.

**Independence and objectivity**

7.3.7 To promote objectivity in decision making by the Board, the formal and perceived independence of Board Members should be ensured. To that end, Board Members should avoid personal ties or financial or business interests which conflict with that of the insurer. Where it is not reasonably possible to avoid conflicts of interests, such conflicts should be managed. Documented procedures and policies should be in place to identify and address conflicts of interests which could include disclosure of potential conflicts of interests, requirements for arm’s length transactions, abstention of voting and, where appropriate, prior approval by the Board or shareholders of professional positions or transactions.

7.3.8 Besides policies on conflicts of interests, the insurer should ensure objectivity in decision making by establishing clear and objective independence criteria which should be met by an adequate number of members of the Board (ie non-executive Board Members). For this purpose, the independence criteria should also take account of group structures and other applicable factors. Meeting such criteria is particularly important for those Board Members undertaking specific roles (such as members of the remuneration and audit committees) in which conflicts of interests are more likely to arise.

7.3.9 Objectivity in decision making is also promoted by independence of mind of the individual Board Members. This means that a Board member should act without favour; provide constructive and robust challenge of proposals and decisions; ask for information when the member judges it necessary in the light of the issues; and avoid “group-think”.

7.3.10 Board Members should also bear in mind the duties of good faith and loyalty applicable to them at the individual level, as set out in Standard 7.4.

**CF 7.3.b** The group-wide supervisor requires the IAIG Board to ensure that the group-wide corporate governance framework includes policies and processes to identify and avoid, or manage, conflicts of interest that may adversely affect the IAIG as a whole or any of its legal entities.

**CF 7.3.b.1** Conflicts of interest within an IAIG could arise:
### Board powers

#### 7.3.11 To be able to discharge its role and responsibilities properly, the Board should have well-defined powers, which are clearly set out either in legislation and/or as part of the constituent documents of the insurer (such as the constitution, articles of incorporation, by-laws or internal/organisational rules). These should, at least, include the power to obtain timely and comprehensive information relating to the management of the insurer, including direct access to relevant persons within the organisation for obtaining information, such as Senior Management and Key Persons in Control Functions.

### Access to resources

#### 7.3.12 Adequate resources, such as sufficient funding, staff and facilities, should be allocated to the Board to enable the Board Members to carry out their respective roles and responsibilities efficiently and effectively. The Board should have access to services of external consultants or specialists where necessary or appropriate, subject to criteria (such as independence) and due procedures for appointment and dismissal of such consultants or specialists.

### Delegations

#### 7.3.13 The Board may delegate some of the activities or tasks associated with its own roles and responsibilities. (Delegations in this context are distinguished from outsourcing of business activities by the insurer, which is dealt with in ICP 8 Risk Management and Internal Controls.) Notwithstanding such delegations, the Board as a whole retains the ultimate responsibility for the activities or tasks delegated, and the decisions made in reliance on any advice or recommendations made by the persons or committees to whom the tasks were delegated.

#### 7.3.14 Where the Board makes any delegations, it should ensure that:

- the delegation is appropriate. Any delegation that results in the Board not being able to discharge its own roles and responsibilities effectively would be an undue or inappropriate delegation. For example, the duty to oversee the Senior Management should not be delegated to a Board committee comprised mostly or solely of executive members of the Board.

<table>
<thead>
<tr>
<th>CF 7.3.b.2</th>
<th>Where conflicts of interest involving individuals or legal entities cannot be avoided, the relevant individuals or legal entities should inform the relevant Board or the IAIG Board of the conflict and take measures to mitigate its adverse impact.</th>
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<td>at the level of the Board, Senior Management and Key Persons in Control Functions of the Head of the IAIG and of its legal entities; and</td>
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<td>among the interests of the legal entities, or between the group-wide interests and those of any legal entity. For example, when the IAIG may be harmed by actions of insurance legal entities within the IAIG, or when an insurance legal entity within the IAIG may be harmed by the actions of the IAIG.</td>
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who are involved in the day-to-day management of the insurer;

- the delegation is made under a clear mandate with well-defined terms such as those relating to the powers, accountabilities and procedures relating to the delegation, and is supported by adequate resources to effectively carry out the delegated functions;

- there is no undue concentration of powers giving any one person or group of individuals an unfettered and inappropriate level of powers capable of influencing the insurer’s business or management decisions;

- it has the ability to monitor and require reports on whether the delegated tasks are properly carried out; and

- it retains the ability to withdraw the delegation if it is not discharged properly and for due purposes by the delegate, and, for this purpose, have appropriate contingency arrangements in place.

Duties of individual Board Members

7.4 The supervisor requires that an individual member of the Board:

- act in good faith, honestly and reasonably;

- exercise due care and diligence;

- act in the best interests of the insurer and policyholders, putting those interests ahead of his/her own interests;

- exercise independent judgment and objectivity in his/her decision making, taking due account of the interests of the insurer and policyholders; and

- not use his/her position to gain undue personal advantage or cause any detriment to the insurer.

7.4.1 The specific duties identified above are designed to address conflicts of interests that arise between the interests of the individual members of the Board and those of the insurer and policyholders. The insurer should include these duties as part of the terms of engagement of the individual Board Members.

7.4.2 The supervisor should be satisfied that individual Board Members understand the nature and scope of their duties and how they impact on the way in which the member discharges his/her respective roles and responsibilities. A Board member should consider his/her ability to discharge the roles and responsibilities in a manner as would be expected of a reasonably prudent person placed in a similar position. He/she should act on a fully informed basis, and for this purpose continually seek and acquire information as necessary.

7.4.3 Where a member of the Board of an insurer has common membership on the Board of any other entity within or outside the insurer’s group, there should be clear and well defined procedures regarding the member’s duty of loyalty to the insurer. These may include appropriate
disclosure and in some instances shareholder approval of such overlapping roles. In the event of a material conflict with the interests of the insurer, the member should disclose such conflicts promptly to the Board of the insurer and its stakeholders as appropriate, and be required to decline to vote or take any decisions in any matters in which he/she has an interest.

Duties related to risk management and internal controls

7.5 The supervisor requires the insurer’s Board to provide oversight in respect of the design and implementation of risk management and internal controls.

7.5.1 It is the Board’s responsibility to ensure that the insurer has appropriate systems and functions for risk management and internal controls and to provide oversight to ensure that these systems and the functions that oversee them are operating effectively and as intended. The responsibilities of the Board are described further in ICP 8 (Risk Management and Internal Controls).

Duties related to remuneration

7.6 The supervisor requires the insurer’s Board to:

- adopt and oversee the effective implementation of a written remuneration policy for the insurer, which does not induce excessive or inappropriate risk taking, is in line with the corporate culture, objectives, strategies, identified risk appetite, and long term interests of the insurer, and has proper regard to the interests of its policyholders and other stakeholders; and

- ensure that such a remuneration policy, at least, covers those individuals who are members of the Board, Senior Management, Key Persons in Control Functions and other employees whose actions may have a material impact on the risk exposure of the insurer (major risk–taking staff).

7.6.1 Sound remuneration policy and practices are part of the corporate governance framework of an insurer. This standard and guidance are neither intended to unduly restrict nor reduce an insurer’s ability to attract and retain skilled talent by prescribing any particular form or level of individual remuneration. Rather, they aim to promote the alignment of remuneration policies with the long term interests of insurers to avoid excessive risk taking, thereby promoting sound overall governance of insurers and fair treatment of customers.

Overall remuneration strategy and oversight

7.6.2 As a part of effective risk management, an insurer should adopt and implement a prudent and effective remuneration policy. Such a policy should not encourage individuals, particularly members of the Board and Senior Management, Key Persons in Control Functions and major risk-taking staff, to take inappropriate or excessive risks, especially where performance-based variable remuneration is used.

7.6.3 The Board, particularly members of the remuneration committee where one exists, should collectively have the requisite competencies to make informed and independent judgments on the suitability of an insurer’s remuneration policy. Such competencies include skills, such as a
sufficient understanding of the relationship between risk and remuneration practices. The remuneration committee, where established, should have an adequate representation of non-executive members to promote objectivity in decision-making.

7.6.4 In order to satisfy itself about the effectiveness of the remuneration policy and practices, the Board should consider at least:

- the components of the overall remuneration policy, particularly the use and balance of fixed and variable components;
- the performance criteria and their application for the purposes of determining remuneration payments;
- the remuneration of the members of the Board, Senior Management and major risk-taking staff; and
- any reports or disclosures on the insurer’s remuneration practices provided to the supervisor or the public.

7.6.5 The Board should ensure that in structuring, implementing and reviewing the insurer’s remuneration policy, the decision-making process identifies and manages conflicts of interests and is properly documented. Members of the Board should not be placed in a position of actual or perceived conflicts of interests in respect of remuneration decisions.

7.6.6 The Board should also ensure that the relevant Key Persons in Control Functions are involved in the remuneration policy-setting and monitoring process to ensure that remuneration practices do not create incentives for excessive or inappropriate risk taking, are carried out consistently with established policies and promote alignment of risks and rewards across the organisation. Similarly, the remuneration and risk management committees of the Board, if such committees exist, should interact closely with each other and provide input to the Board on the incentives created by the remuneration system and their effect on risk-taking behaviour.

7.6.7 The potential for conflicts of interests that may compromise the integrity and objectivity of the staff involved in control functions should be managed. This can be achieved by a variety of means, such as making their remuneration:

- predominantly based on the effective achievement of the objectives appropriate to such control functions. Performance measures for staff in control functions should represent the right balance between objective assessments of the control environment (eg the conduct of the relationship between the control functions and executive management) and outputs delivered by the control functions, including their impact, quality and efficiency in supporting the oversight of risks. Such output measures may include recommendations made and implemented to reduce risks, reduction in number of compliance breaches and measures adopted to promptly rectify identified breaches, results of external quality reviews and losses recovered or avoided through audits of high risk areas;
• not linked to the performance of any business units which are subject to their control or oversight. For example, where risk and compliance functions are embedded in a business unit, a clear distinction should be drawn between the remuneration policy applicable to staff undertaking control functions and other staff in the business unit, such as through the separation of the pools from which remuneration is paid to the two groups of staff; and

• adequate as an overall package to attract and retain staff with the requisite skills, knowledge and expertise to discharge those control functions effectively and to increase their competence and performance.

7.6.8 Where any control function is outsourced, the remuneration terms under the agreement with the service provider should be consistent with the objectives and approved parameters of the insurer’s remuneration policy.

Variable remuneration

7.6.9 Variable remuneration should be performance-based using measures of individual, unit or group performance that do not create incentives for inappropriate risk taking.

7.6.10 To better align performance-based incentives with the long term value creation and the time horizon of risks to which the insurer may be exposed, due consideration should be given to the following:

• There should be an appropriate mix of fixed and variable components, with adequate parameters set for allocating cash versus other forms of remuneration, such as shares. A variable component linked to performance that is too high relative to the fixed component may make it difficult for an insurer to reduce or eliminate variable remuneration in a poor financial year;

• The reward for performance should include an adjustment for the material current and future risks associated with performance. Since the time horizon of performance and associated risks can vary, the measurement of performance should, where practicable, be set in a multi-year framework to ensure that the measurement process is based on longer term performance;

• If the variable component of remuneration is significant, the major part of it should be deferred for an appropriate specified period. The deferral period should take account of the time frame within which risks associated with the relevant performance (such as the cost of capital required to support risks taken and associated uncertainties in the timing and the likelihood of future revenues and expenses) may materialise. The deferral period applied may vary depending on the level of seniority or responsibility of the relevant individuals and the nature of risks to which the insurer is exposed;
• The award of variable remuneration should contain provisions that enable the insurer, under certain circumstances, to apply malus or claw back arrangements in the case of subdued or negative financial performance of the insurer which is attributed to the excessive risk taking of the staff concerned and when risks of such performance have manifested after the award of variable remuneration; and

• Guaranteed variable remuneration should generally not be offered, as they are not consistent with sound risk management and performance-based rewards.

7.6.11 The variable component should be subject to prudent limits set under the remuneration policy that are consistent with the insurer’s capital management strategy and its ability to maintain a sound capital base taking account of the internal capital targets or regulatory capital requirements of the insurer.

7.6.12 The performance criteria applicable to the variable components of remuneration should promote a complete assessment of risk-adjusted performance. For this purpose, due consideration should be given to the need for performance criteria to:

• be clearly defined and be objectively measurable;

• be based not only on financial but also on non-financial criteria as appropriate (such as compliance with regulation and internal rules, achievement of risk management goals, adequate and timely follow up of internal audit recommendations as well as compliance with market conduct standards and fair treatment of customers;

• take account of not only the individual’s performance, but also the performance of the business unit concerned where relevant and the overall results of the insurer and the group; and

• not treat growth or volume as a criterion in isolation from other performance criteria.

Share-based components

7.6.13 Where share-based components of variable remuneration (such as shares, share options or similar instruments) are used, appropriate safeguards should be implemented to align incentives and the longer-term interests of the insurer. Such safeguards may include that:

• shares do not vest for a minimum specified period after their award (“vesting restrictions”);

• share options or other similar rights are not exercisable for a minimum specified period after their award (“holding restrictions”); and

• individuals are required to retain an appropriate proportion of the shares awarded until the end of their employment or other specified period beyond their employment (“retention restrictions”).
7.6.14 Subject to any applicable legal restrictions, it is appropriate that future vesting and holding restrictions for share-based remuneration remain operative even upon cessation of employment (i.e., there should be no undue acceleration of the vesting of share-based payments or curtailing of any holding restrictions).

Severance payments

7.6.15 Where an insurer provides discretionary pay-outs on termination of employment ("severance payments", sometimes also referred to as "golden parachutes"), such payment should be subject to appropriate governance controls and limits. In any case, such pay-outs should be aligned with the insurer's overall financial condition and performance over an appropriate time horizon. Severance payments should be related to performance over time; should not reward failure and should not be payable in the case of failure or threatened failure of the insurer, particularly to an individual whose actions have contributed to the failure or potential failure of the insurer.

Reliable and transparent financial reporting

7.7 The supervisor requires the insurer's Board to ensure there is a reliable financial reporting process for both public and supervisory purposes that is supported by clearly defined roles and responsibilities of the Board, Senior Management and the external auditor.

7.7.1 The Board is responsible for overseeing the insurer's systems and controls to ensure that the financial reports of the insurer present a balanced and accurate assessment of the insurer's business and its general financial condition and viability. The Board carries out functions including:

- overseeing the financial statements, financial reporting and disclosure processes;
- monitoring whether accounting policies and practices of the insurer are operating as intended;
- overseeing the internal audit process (reviews by internal audit of the insurer's financial reporting controls) and reviewing the internal auditor's plans and material findings; and
- reporting to the supervisor on significant issues concerning the financial reporting process, including actions taken to address or mitigate identified financial reporting risks.

7.7.2 The Board should ensure that significant findings and observations regarding weaknesses in the financial reporting process are promptly rectified. This should be supported by a formal process for reviewing and monitoring the implementation of recommendations by the external auditor.

External Audit

7.8 The supervisor requires the insurer's Board to ensure that there is adequate governance and oversight of the external audit process.
7.8.1 The Board should ensure that the insurer:

- applies robust processes for approving, or recommending for approval, the appointment, reappointment, removal and remuneration of the external auditor;
- applies robust processes for monitoring and assessing the independence of the external auditor and to ensure that the appointed external auditor has the necessary knowledge, skills, expertise, integrity and resources to conduct the audit and meet any additional regulatory requirements;
- monitors and assesses the effectiveness of the external audit process throughout the audit cycle;
- investigates circumstances relating to the resignation or removal of an external auditor, and ensuring prompt actions are taken to mitigate any identified risks to the integrity of the financial reporting process, and
- reports to the supervisor on circumstances relating to the resignation or removal of the external auditor.

7.8.2 The Board should oversee the external audit process and safeguard and promote an effective relationship with the external auditor. For this purpose the Board should ensure that:

- the terms of engagement of the external auditor are clear and appropriate to the scope of the audit and resources required to conduct the audit and specify the level of audit fees to be paid;
- the auditor undertakes a specific responsibility under the terms of engagement to perform the audit in accordance with relevant local and international audit standards;
- the external auditor complies with internationally accepted ethical and professional standards and, where applicable, the more stringent requirements applicable to audits of listed entities and public interest entities;
- there are adequate policies and a process to ensure the independence of the external auditor, including:
  - restrictions and conditions for the provision of non-audit services which are subject to approval by the Board;
  - periodic rotation of members of the audit team and/or audit firm as appropriate; and
  - safeguards to eliminate or reduce to an acceptable level identified threats to the independence of the external auditor.
- there is adequate dialogue with the external auditor on the scope and timing of the audit to understand the issues of risk, information on the insurer’s operating environment which is relevant to the audit, and any areas in which the Board may request for specific procedures to be carried out by the
external auditor, whether as a part or an extension of the audit engagement; and

- there is unrestricted access by the external auditor to information and persons within the insurer as necessary to conduct the audit.

7.8.3 In order to establish the degree of assurance that the Board can draw from the external auditor’s report, the Board should also understand the external auditor’s approach to the audit. This includes the assessment of the external auditor’s ability to:

- identify and assess the risks of material misstatement in the insurer’s financial statements, taking into consideration the complexities of insurance activities and the need for insurers to have a strong control environment;

- respond appropriately to the risks of material misstatement in the insurer’s financial statements; and

- develop appropriate relationships with the internal audit function and the actuarial function.

The Board should take appropriate actions where doubts arise as to the reliability of the external audit process.

7.8.4 In order to enable the Board to carry out its oversight responsibilities and to enhance the quality of the audit, the Board should have an effective communication with the external auditor. This should include:

- regular meetings between the Board and the external auditor during the audit cycle, including meetings without management present; and

- prompt communication of any information regarding internal control weaknesses or deficiencies of which the external auditor becomes aware.

The Board should require the external auditor to report to it on all relevant matters.

7.8.5 The supervisor and the external auditor should have an effective relationship that includes appropriate communication channels for the exchange of information relevant to carrying out their respective statutory responsibilities.

7.8.6 Reports prepared by the external auditor for the insurer (eg management letters) should be made available to the supervisor by the insurer or the external auditor.

7.8.7 The supervisor should require the external auditor to report matters that are likely to be of material significance. This would include material fraud, suspicion of material fraud and regulatory breaches or other significant audit findings identified in the course of the audit. Such information should be provided to the supervisor without the need for prior consent of the insurer and the external auditor should be duly protected from liability for any information disclosed to the supervisor in good faith.
7.8.8 The supervisor should require a further audit by a different external auditor where necessary.

Communications

7.9 The supervisor requires the insurer's Board to have systems and controls to ensure appropriate, timely and effective communications with the supervisor on the governance of the insurer.

7.9.1 Communications with the supervisor should promote effective engagement of the supervisor on the governance of the insurer to enable informed judgments about the effectiveness of the Board and Senior Management in governing the insurer.

7.9.2 Subject to any reasonable commercial sensitivities and applicable privacy or confidentiality obligations, the insurer's communication policies and strategies should include providing to the insurer's stakeholders information such as the following:

- the insurer's overall strategic objectives, covering existing or prospective lines of business and how they are being or will be achieved;
- the insurer’s governance structures, such as allocation of oversight and management responsibilities between the Board and the Senior Management, and organisational structures, including reporting lines;
- members of the Board and any Board committees, including their respective expertise, qualifications, track-record, other positions held by such members, and whether such members are regarded as independent;
- processes in place for the Board to evaluate its own performance and any measures taken to improve the Board’s performance;
- the general design, implementation and operation of the remuneration policy;
- major ownership and group structures, and any significant affiliations and alliances; and
- material related-party transactions.

7.9.3 In addition to information publicly available, the supervisor may require more detailed and additional information relating to the insurer's corporate governance framework for supervisory purposes, which may include commercially sensitive information, such as assessments by the Board of the effectiveness of the insurer's governance system, internal audit reports and more detailed information on the remuneration structures adopted by the insurer for the Board, Senior Management, Key Persons in Control Functions and major risk-taking staff. The insurer’s communication policies and strategies should enable such information to be provided to the supervisor in a timely and efficient manner. Supervisors should safeguard such information having due regard to the confidentiality of commercially sensitive information and applicable laws.
The group-wide supervisor requires the IAIG Board to ensure that the Head of the IAIG reports to the group-wide supervisor, through regularly scheduled or ad hoc reporting, material changes related to at least the following:

- location of legal entities;
- legal structures;
- management structures;
- governance structure and processes of the IAIG Board;
- affiliations with other groups;
- strategy;
- risk appetite; and
- business activities.

The group-wide systems and controls for communications should give the Head of the IAIG the ability to inform the group-wide supervisor of governance issues concerning the IAIG.

Disclosure of information on remuneration should be sufficient to enable stakeholders to evaluate how the remuneration system relates to risk and whether it is operating as intended. Relevant information may include:

- the operation of risk adjustments, including examples of how the policy results in adjustments to remuneration for employees at different levels;
- how remuneration is related to performance (both financial and personal business conduct) over time; and
- valuation principles in respect of remuneration instruments.

Appropriate quantitative information should also be made available to enable supervisors to evaluate the financial impact of the remuneration policy. Such information may include:

- the total cost of remuneration awarded in the period, analysed according to the main components such as basic salary, variable remuneration and long-term awards;
- the total amount set aside in respect of deferred variable remuneration;
- adjustment to net income for the period in respect of variable remuneration awarded in previous periods;
- the total costs of all sign-on payments in the period and number of individuals to whom these relate; and
- the total costs of all severance payments in the period and number of individuals to whom these relate.
7.9.6 These amounts should be analysed by type of instrument (e.g. cash, shares, share options etc.) as applicable, and in a manner consistent with the key elements of the remuneration policy.

7.9.7 Disclosure of information on governance should be made on a regular (for instance, at least annually) and timely basis.

Duties of Senior Management

7.10 The supervisor requires the insurer to ensure that Senior Management:

- carries out the day-to-day operations of the insurer effectively and in accordance with the insurer’s corporate culture, business objectives and strategies for achieving those objectives in line with the Insurer’s long term interests and viability;
- promotes sound risk management, compliance and fair treatment of customers;
- provides the Board adequate and timely information to enable the Board to carry out its duties and functions including the monitoring and review of the performance and risk exposures of the insurer, and the performance of Senior Management; and
- maintains adequate and orderly records of the internal organisation.

7.10.1 Senior Management should implement appropriate systems and controls, in accordance with the established risk appetite and corporate values and consistent with internal policies and processes.

7.10.2 Such systems and controls should provide for organisation and decision-making in a clear and transparent manner that promotes effective management of the insurer. Senior Management’s systems and controls should encompass:

- processes for engaging persons with appropriate competencies and integrity to discharge the functions under Senior Management, which include succession planning, ongoing training and procedures for termination;
- clear lines of accountability and channels of communication between persons in Senior Management and Key Persons in Control Functions;
- proper procedures for the delegation of Senior Management functions and monitoring whether delegated functions are carried out effectively and properly, in accordance with the same principles that apply to delegations by the Board (see Guidance 7.3.13 and 7.3.14);
- standards of conduct and codes of ethics for the Senior Management and other staff to promote a sound corporate culture, and the effective implementation on an ongoing basis of standards and codes (see ICP 8 Risk Management and Internal Controls for conflicts of interest provisions);
- proper channels of communications, including clear lines of reporting, as between the individuals performing the functions.
of the Senior Management and the Board, including provisions dealing with whistleblower protection, and their effective implementation; and

- effective communication strategies with supervisors and stakeholders that include the identification of matters that should be disclosed, and to whom such disclosure should be made.

7.10.3 Adequate procedures should be in place for assessing the effectiveness of Senior Management’s performance against the performance objectives set by the Board. For this purpose, annual assessments of their performance against set goals should be carried out at least annually, preferably by an independent party, a control function, or the Board itself. Any identified inadequacies or gaps should be addressed promptly and reported to the Board.

7.10.4 Senior Management should also promote strong risk management and internal controls through personal conduct and transparent policies. Senior Management should communicate throughout the insurer the responsibility of all employees in this respect. It should not interfere with the activities that control functions carry out in the rightful exercise of their responsibilities, including that of providing an independent view of governance, risk, compliance and control related matters.

**Supervisory review**

7.11 The supervisor requires the insurer to demonstrate the adequacy and effectiveness of its corporate governance framework.

7.11.1 The supervisor plays an important role by requiring the Board and Senior Management of the insurer to demonstrate that they are meeting the applicable corporate governance requirements, consistent with these standards, on an ongoing basis. The onus for demonstrating, to the satisfaction of the supervisor, that the corporate governance framework is effective and operates as intended rests with the insurer.

7.11.2 The Supervisor should assess through its supervisory review and reporting processes whether the insurer’s overall corporate governance framework is effectively implemented and remains adequate (see ICP 9 Supervisory Review and Reporting).

7.11.3 To help facilitate the supervisory review and reporting processes, the supervisor should establish effective channels of communication with the insurer, and have access to relevant information concerning the governance of the insurer. This may be obtained through periodic reports to the supervisor and any information obtained on an ad hoc basis (see also Standard 7.7). Communication may also be facilitated by the supervisor having regular interaction with the Board, Senior Management and Key Persons in Control Functions.

7.11.4 The supervisor should assess the governance effectiveness of the Board and Senior Management and determine the extent to which their actions and behaviours contribute to good governance. This includes the extent to which the Board and Senior Management contribute to setting and following the “tone at the top”; how the corporate culture of the insurer is communicated and put into practice; how information flows to and from
the Board and Senior Management; and how potential material problems are identified and addressed throughout the insurer.

7.11.5 To ascertain the ongoing effectiveness of the Board and Senior Management, the supervisor may also consider the use of measures such as the following, where appropriate:

- ongoing mandatory training that is commensurate with their respective duties, roles and responsibilities of the Board and Senior Management within the insurer;
- a review of the periodic self-evaluation undertaken by the Board as referred to in Guidance 7.3.3 and 7.11.1;
- meetings and/or interviews with the Board and Senior Management, both collectively and individually as appropriate, particularly to reinforce expectations relating to their performance and to get a sense of how informed and proactive they are; and
- attending and observing Board proceedings.

7.11.6 Where remuneration policies of an insurer contain more high risk elements, closer supervisory scrutiny of those policy and practices may also be warranted, including requests for additional information as appropriate to assess whether those practices are having an adverse impact on the ongoing viability of the insurer or commissioning an independent assessment of the insurer’s remuneration policy and practices.


**ICP 8  Risk Management and Internal Controls**

The supervisor requires an insurer to have, as part of its overall corporate governance framework, effective systems of risk management and internal controls, including effective functions for risk management, compliance, actuarial matters and internal audit.

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*Introductory Guidance*

8.0.1 As part of the overall corporate governance framework and in furtherance of the safe and sound operation of the insurer and the protection of policyholders, the Board is ultimately responsible for ensuring that the insurer has in place effective systems of risk management and internal controls and functions to address the key risks it faces and for the key legal and regulatory obligations that apply to it. Senior Management effectively implements these systems and provides the necessary resources and support for these functions.

8.0.2 In some jurisdictions, risk management is considered a subset of internal controls, while other jurisdictions would see it the other way around. The two systems are in fact closely related. Where the boundary lies between risk management and internal controls is less important than achieving, in practice, the objectives of each.

8.0.3 The systems and functions should be adequate for the insurer’s objectives, strategy, risk profile, and the applicable legal and regulatory requirements. They should be adapted as the insurer’s business and internal and external circumstances change.

8.0.4 The nature of the systems that the insurer has is dependent on many factors. The systems typically include:

- strategies setting out the approach of the insurer for dealing with specific areas of risk and legal and regulatory obligation;
- policies defining the procedures and other requirements that members of the Board and employees need to follow;
- processes for the implementation of the insurer’s strategies and policies; and
- controls to ensure that such strategies, policies and processes are in fact in place, are being observed and are attaining their intended objectives.

8.0.5 An insurer’s functions (whether in the form of a person, unit or department) should be properly authorised to carry out specific activities relating to matters such as risk management, compliance, actuarial matters and internal audit. These are generally referred to as control functions.

*Special considerations for groups*

8.0.6 Group-wide risks may affect insurance legal entities within a group, while risks at the insurance legal entity level could also affect the group as a
whole. To help address this, groups should have strong risk management and compliance culture across the group and at the insurance legal entity level. Thus, in addition to meeting group governance requirements, the group should take into account the obligations of its insurance legal entities to comply with local laws and regulations.

8.0.7 How a group's systems of risk management and internal controls are organised and operate will depend on the governance approach the group takes, i.e., a more centralised or a more decentralised approach (see Issues Paper on Approaches to Group Corporate Governance; impact on control functions). Regardless of the governance approach, it is important that effective systems of risk management and internal controls exist and that risks are properly monitored and managed at the insurance legal entity level and on a group-wide basis.

8.0.8 Additionally, a group's governance approach will also affect the way in which its control functions are organised and operated. Coordination between the insurance legal entity and group control functions is important to help ensure overall effective systems of risk management and internal controls. Regardless of how the group control functions are organised and operated, the result should provide an overall view of the group-wide risks and how they should be managed.

8.0.9 Supervisors should require the establishment of comprehensive and consistent group governance and assess its effectiveness. While the group-wide supervisor is responsible for assessing the effectiveness of the group's systems of risk management and internal controls, the other involved supervisors undertake such assessments on a legal entity basis. Appropriate supervisory cooperation and coordination is necessary to have a group-wide view and to enhance the assessment of the legal entities.

**Systems for risk management and internal controls**

8.1 The supervisor requires the insurer to establish, and operate within, an effective and documented risk management system, which includes, at least:

- a risk management strategy that defines the insurer's risk appetite;
- a risk management policy outlining how all material risks are managed within the risk appetite; and
- the ability to respond to changes in the insurer's risk profile in a timely manner.

**Basic components of a risk management system**

8.1.1 The risk management system is designed and operated at all levels of the insurer to allow for the identification, assessment, monitoring, mitigation and reporting of all risks of the insurer in a timely manner. It takes into account the probability, potential impact and time horizon of risks.

8.1.2 An effective risk management system should:
• take into account the insurer’s overall business strategy and business activities (including any business activities which have been outsourced);

• provide that the insurer’s risk appetite, expressed in a risk appetite statement, be aligned with the insurer’s business strategy and embedded in its day-to-day activities;

• provide relevant objectives, key principles and proper allocation of responsibilities for dealing with risk across the business areas and business units of the insurer;

• provide explanations of the methodologies, key assumptions and limitations of risk management; for groups this would include the rationale as to the risk appetite for different individual insurance legal entities within the group;

• provide a documented process defining the Board approval required for any deviations from the risk management strategy or the risk appetite and for settling any major interpretation issues that may arise;

• define and categorise material risks (by type) to which the insurer is exposed, at both insurance legal entity and group level where applicable, and the levels of acceptable risk limits for each type of these risk;

• include documented policies that describe how categories of risks are managed and the specific obligations of employees and the insurer in dealing with risk, including risk escalation and risk mitigation tools;

• provide suitable processes and tools (including stress testing and, where appropriate, models) for identifying, assessing, monitoring and reporting on risks. Such processes should also cover contingency planning;

• provide for regular reviews of the risk management system (and its components) to help ensure that necessary modifications and improvements are identified and made in a timely manner; and

• appropriately address other matters related to risk management for solvency purposes set out in ICP 16 Enterprise Risk Management for Solvency Purposes.

Scope and embedding of the risk management system

8.1.3 The risk management system should cover at least the following risks: underwriting and reserving, asset-liability management, investments, liquidity, concentration, operational and conduct, as well as reinsurance and other risk mitigation techniques.

8.1.4 The risk management system should be aligned with the insurer’s risk culture and embedded into the various business areas and units with the aim of having the appropriate risk management practices and procedures embedded in the key operations and structures.
CF 8.1.a  The group-wide supervisor requires the Head of the IAIG to ensure that the group-wide risk management system encompasses the levels of the Head of the IAIG and legal entities within the IAIG and covers, at least, the:

- diversity and geographical reach of the activities of the IAIG;
- nature and degree of risks of individual legal entities and business lines;
- aggregation of risks from the legal entities within the IAIG that arises at the level of the Head of the IAIG, including cross-border risks;
- interconnectedness of the legal entities within the IAIG;
- level of sophistication and functionality of information and reporting systems in addressing key group-wide risks; and
- applicable laws and regulations of the jurisdictions where the IAIG operates.

CF 8.1.a.1  The group-wide risk management system should:

- be integrated with its organisational structure, decision-making processes, business operations, and risk culture;
- be integrated within its legal entities; and
- measure the risk exposure of the IAIG against the risk limits on an ongoing basis in order to identify potential concerns as early as possible.

CF 8.1.b  The group-wide supervisor requires the Head of the IAIG to reflect, in the documentation of its group-wide risk management system, material differences in risk management that may apply to different legal entities within the IAIG and their associated risks.

CF 8.1.c  The group-wide supervisor requires the Head of the IAIG to ensure that the IAIG has in place policies and processes for promoting a sound risk culture.

CF 8.1.c.1  Policies and processes for promoting a sound risk culture should include risk management training, address independence, and create appropriate incentives for staff.

CF 8.1.c.2  The IAIG’s risk culture should support timely evaluation and open communication of emerging risks that may be significant to the IAIG and its legal entities.

Identification and Assessment

8.1.5  The risk management system should take into account all reasonably foreseeable and relevant material risks to which the insurer is exposed, both at the insurer and the individual business unit levels. This includes current and emerging risks.

8.1.6  Insurers should assess material risks both qualitatively and, where appropriate, quantitatively. Appropriate consideration should be given to
a sufficiently wide range of outcomes, as well as to the appropriate tools and techniques to be used. The interdependencies of risks should also be analysed and taken into account in the assessments.

8.1.7 The insurer’s risk assessment should be documented including detailed descriptions and explanations of the risks covered, the approaches used, and the key judgements and assumptions made.

8.1.8 Insurers should have in place adequate processes, controls and systems to assess the risks of new products and carry out a risk assessment before entering into new business lines and products. Significant new or changed activities and products that may increase an existing risk or create a new type of exposure should be approved by Senior Management and/or by the Board.

Monitoring

8.1.9 The risk management system should include processes and tools for monitoring risk, such as early warnings or triggers that allow timely consideration of, and adequate response to, material risks.

Mitigation

8.1.10 The risk management system should include strategies and tools to mitigate against material risks. In most cases an insurer will control or reduce the risk to an acceptable level. Another response to risk is to transfer the risk to a third party. If risks are not acceptable within the risk appetite and it is not possible to control, limit or transfer the risk, the insurer should cease or change the activity which creates the risk.

Reporting

8.1.11 Risks, the overall assessment of risks and the related action plans should be reported to the Board and/or to Senior Management, as appropriate, using qualitative and quantitative indicators and effective action plans. The insurer’s documented risk escalation process should allow for reporting on risk issues within established reporting cycles and outside of them for matters of particular urgency.

8.1.12 The Board should have appropriate ways to carry out its responsibilities for risk oversight. The risk management policy should therefore cover the content, form and frequency of reporting that it expects on risk from Senior Management and each of the control functions. Any proposed activity that would go beyond the Board-approved risk appetite should be subject to appropriate review and require Board approval.

Risk Management Policy

8.1.13 The insurer’s risk management policy should be written in a way to help employees understand their responsibilities regarding risk management. It should also reflect how the risk management system relates to the insurer’s overall corporate governance framework and its corporate culture. Regular internal communications and training within the insurer on the risk management policy and risk appetite may help in this regard.

8.1.14 For insurance groups, a risk management policy addresses the way in which the group manages risks that are material at the insurance group level, including risks that arise from the insurance group being part of a
wider group. For an insurance legal entity that is part of a group, the risk management policy of that entity should address management of risks material at the entity level as well as additional risk it faces as a result of its membership in a group, which can encompass the widest group of which the insurance legal entity is a member and not only the entity’s insurance group. Within an insurance group, the head of the group and the legal entities should ensure appropriate coordination and consistency between the head of the group and the legal entities when setting the risk management policy.

Changes to the risk management system

8.1.15 Both the Board and Senior Management should be attentive to the need to modify the risk management system in light of changes in the insurer’s risk profile as well as other new internal or external events and/or circumstances. The risk management system should include mechanisms to incorporate new risks and new information related to risk already identified on a regular basis. The risk management system should also be responsive to the changing interests and reasonable expectations of policyholders and other stakeholders.

8.1.16 Material changes to an insurer’s risk management system should be documented and subject to approval by the Board. The reasons for the changes should be documented. Appropriate documentation should be available to internal audit, external audit and the supervisor for their respective assessments of the risk management system.

8.1.17 As part of its responsiveness to changes in the insurer’s risk profile, the risk management system should incorporate a feedback loop based on appropriate information, management processes and objective assessment. A feedback loop provides a process of assessing the effect of changes in risk leading to changes in risk management policy, risk limits and risk mitigating actions. This may help ensure that decisions made by the Board and Senior Management are implemented and their effects monitored and reported in a timely and sufficiently frequent manner.

8.1.18 Within an insurance group, there should be sufficient coordination and exchange of information between the head of the insurance group and its insurance legal entities as part of their respective feedback loops to ensure relevant changes in risk profiles can be taken into account.

CF 8.1.d The group-wide supervisor requires the Head of the IAIG to:

- review, at least annually, the group-wide risk management system to ensure that existing and emerging risks as well as changes in the IAIG’s structure and/or business strategy, are taken into account; and
- identify and make the necessary modifications and improvements in a timely manner.

CF 8.1.d.1 The Head of the IAIG should assess whether a change occurring in one or more legal entities may affect the IAIG’s risk profile overall,
because the impact on a group-wide basis may not be immediately apparent.

CF 8.1.d.2 The group-wide risk management system should take account of all material changes at a legal entity level that may have an impact on how the IAIG measures and mitigates risk at a group level.

8.2 The supervisor requires the insurer to establish, and operate within, an effective and documented system of internal controls.

Basic components of an internal controls system

8.2.1 The internal controls system should ensure effective and efficient operations, adequate control of risks, prudent conduct of business, reliability of financial and non-financial information reported (both internally and externally), and compliance with laws, regulations, supervisory requirements and the insurer's internal rules and decisions. It should be designed and operated to assist the Board and Senior Management in the fulfilment of their respective responsibilities for oversight and management of the insurer. Some insurers have a designated person or function to support the advancement, coordination and/or management of the overall internal controls system on a more regular basis.

8.2.2 The internal controls system should cover all units and activities of the insurer and should be an integral part of the daily activities of an insurer. The controls should form a coherent system, which should be regularly assessed and improved as necessary. Each individual control\(^1\) of an insurer, as well as all its controls cumulatively, should be designed for effectiveness and operate effectively.

8.2.3 An effective internal control system requires an appropriate control structure with control activities defined at every business unit level. Depending on the organisational structure of the insurer, business or other units should own, manage and report on risks and should be primarily accountable for establishing and maintaining effective internal control policies and processes. Control functions should determine and assess the appropriateness of the controls used by the business or other units. The internal audit function should provide independent assurance on the quality and effectiveness of the internal controls system.\(^2\)

8.2.4 An effective internal controls system typically includes:

Segregation of duties and prevention of conflicts of interest

- appropriate segregation of duties and controls to ensure such segregation is observed. This includes, amongst others, having sufficient distance between those accountable for a

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\(^1\) Individual controls may be preventive (applied to prevent undesirable outcomes) or detective (to uncover undesirable activity). Individual controls may be manual (human), automated, or a combination and may be either general or process or application specific.

\(^2\) This division of responsibilities between business, risk management and compliance and internal audit is typically referred to as the three lines of defence. The business is considered as the first line of defence, the control functions (other than internal audit) as the second line of defence, and internal audit as the third line of defence. The business is deemed to "own" the controls, and the other lines of defence are there to help ensure their application and viability. Whatever approach is used, it is important that responsibilities be clearly allocated to promote checks and balances and avoid conflicts of interest.
process or policy and those who check if for such a 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 a control is effective in design and operation;

- up-to-date policies regarding who can sign for or commit the insurer, and for what amounts, with corresponding controls, such as practice that key decisions should be taken at least by two persons and the practice of double or multiple signatures. Such policies and controls should be designed, among other things, to prevent any major transaction being entered into without appropriate governance review or by anyone lacking the necessary authority and to ensure that borrowing, trading, risk and other such limits are strictly observed. Such policies should foresee a role for control functions, for example by requiring for major matters the review and sign-off by Risk Management or Compliance, and/or approval by a Board level committee;

**Policies and processes**

- appropriate controls for all key business processes and policies, including for major business decisions and transactions (including intra-group transactions), critical IT functionalities, access to critical IT infrastructure by employees and related third parties, and important legal and regulatory obligations;

- policies on training in respect of controls, particularly for employees in positions of high trust or responsibility or involved in high risk activities;

- a centralised documented inventory of insurer-wide key processes and policies and of the controls in place in respect of such processes and policies, that also may introduce a hierarchy among the policies;

**Information and communication**

- appropriate controls to provide reasonable assurance over the accuracy and completeness of the insurer’s books, records, and accounts and over financial consolidation and reporting, including the reporting made to the insurer’s supervisors;

- adequate and comprehensive internal financial, operational and compliance data, as well as external market information about events and conditions that are relevant to decision making. Information should be reliable, timely, accessible, and provided in a consistent format;

- information processes that cover all significant activities of the insurer, including contingency arrangements;

- effective channels of communication to ensure that all staff fully understand and adhere to the internal controls and their
duties and responsibilities and that other relevant information is reaching the appropriate personnel;

- policies regarding escalation procedures;

**Monitoring and review**

- processes for regularly checking that the totality of all controls forms a coherent system and that this system works as intended; fits properly within the overall corporate governance framework of the insurer; and provides an element of risk control to complement the risk identification, risk assessment, and risk management activities of the insurer. As part of such review, individual controls are monitored and analysed periodically to determine gaps and improvement opportunities with Senior Management taking such measures as are necessary to address these; and

- periodic testing and assessments (carried out by objective parties such as an internal or external auditor) to determine the adequacy, completeness and effectiveness of the internal controls system and its utility to the Board and Senior Management for controlling the operations of the insurer.

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**CF 8.2.a** The group-wide supervisor requires the Head of the IAIG to ensure that the group-wide internal controls system at the group-wide level covers, at least, the:

- diversity and geographical reach of the activities of the IAIG;
- intra-group transactions;
- interconnectedness of the legal entities within the IAIG; and
- applicable laws and regulations of the jurisdictions where the IAIG operates.

**CF 8.2.b** The group-wide supervisor requires the Head of the IAIG to ensure annual testing and assessments carried out by an independent external or internal party to assess the coherence, completeness and effectiveness of the internal controls system within the IAIG and its utility to the IAIG Board and Senior Management.

**Responsibilities of the Board**

8.2.5 The Board should have an overall understanding of the control environment across the various entities and businesses, and require Senior Management to ensure that for each key business process and policy, and related risks and obligations, there is an appropriate control.

8.2.6 In addition, the Board should ensure there is clear allocation of responsibilities within the insurer, with appropriate segregation, including in respect of the design, documentation, operation, monitoring and testing of internal controls. Responsibilities should be properly documented, such as in charters, authority tables, governance manuals or other similar governance documents.
8.2.7 The Board should determine which function or functions report to it or to any Board Committees in respect of the internal controls system.

Reporting

8.2.8 Reporting on the internal controls system should cover matters such as:

- the strategy in respect of internal controls (such as responsibilities, target levels of compliance to achieve, validations and implementation of remediation plans);
- the stage of development of the internal controls system, including its scope, testing activity, and the performance against annual or periodic internal controls system goals being pursued;
- an assessment of how the various business units are performing against internal control standards and goals;
- control deficiencies, weaknesses and failures that have arisen or that have been identified (including any identified by the internal or external auditors or the supervisor) and the responses thereto (in each case to the extent not already covered in other reporting made to the Board); and
- controls at the appropriate levels so as to be effective, including at the process or transactional level.

Control functions (general)

8.3 The supervisor requires the insurer to have effective control functions with the necessary authority, independence and resources.

8.3.1 As part of the effective systems of risk management and internal controls, insurers have control functions, including for risk management, compliance, actuarial matters and internal audit. Control functions add to the governance checks and balances of the insurer and provide the necessary assurance to the Board in the fulfilment of its oversight duties.

CF 8.3.a The group-wide supervisor requires the Head of the IAIG to ensure that:

- the tasks and responsibilities of the group-wide control functions, whether located at the level of the Head of the IAIG or within another legal entity of the IAIG, are clearly defined; and
- these group-wide control functions do not duplicate, limit or restrict the tasks and responsibilities of control functions at the insurance legal entity level.

CF 8.3.b The group-wide supervisor requires the Head of the IAIG to ensure that the group-wide control functions:

- coordinate with the control functions at the insurance legal entity level; and
- ensure effective group-wide management reporting.
8.3.2 The existence of control functions does not relieve the Board or Senior Management of their respective governance and related responsibilities.

8.3.3 The control functions should be subject to periodic review either by the internal audit function (for control functions other than internal audit) or an objective external reviewer.

**Appointment and dismissal of heads of control functions**

8.3.4 The appointment, performance assessment, remuneration, discipline and dismissal of the head of control functions should be done with the approval of, or after consultation with, the Board or the relevant Board committee. For the head of the internal audit function, the appointment, performance assessment, remuneration, discipline and dismissal should be done by the Board, its Chair or the Audit Committee.

8.3.5 The insurer should notify the supervisor of the reasons for dismissals of heads of control functions.

**Authority and independence of control functions**

8.3.6 The Board should approve the authority and responsibilities of each control function to allow each control function to have the authority and independence necessary to be effective.

8.3.7 The authority and responsibilities of each control function should be set out in writing and made part of, or referred to in, the governance documentation of the insurer. The head of each control function should periodically review such document and submit suggestions for any changes to Senior Management and the Board for approval, where appropriate.

8.3.8 A control function should be led by a person of appropriate level of authority. The head of the control function should not have operational business line responsibilities.

8.3.9 Insurers should organise each control function and its associated reporting lines into the insurer’s organisational structure in a manner that enables such function to operate and carry out their roles effectively. This includes direct access to the Board or the relevant Board committee.

8.3.10 Notwithstanding the possibility for insurers to combine certain control functions, a control function should be sufficiently independent from Senior Management and from other functions to allow its staff to:

- serve as a component of the insurer’s checks and balances;
- provide an objective perspective on strategies, issues, and potential violations related to their areas of responsibility; and
- implement or oversee the implementation of corrective measures where necessary.

8.3.11 Each control function should avoid conflicts of interest. Where any conflicts remain and cannot be resolved with Senior Management, these should be brought to the attention of the Board for resolution.

8.3.12 Each control function should have the authority to communicate on its own initiative with any employee and to have unrestricted access to information in any business unit that it needs to carry out its
responsibilities. The control functions should have the right to conduct investigations of possible breaches and to request assistance from specialists within the insurer, eg legal and internal audit, or engage external specialists to perform the task. The control functions should be free to report to Senior Management or the Board on any irregularities or possible breaches disclosed by its investigations, without fear of retaliation or disfavour from management.

**Resources and qualifications of the control functions**

8.3.13 Each control function should have the resources necessary to fulfil its responsibilities and achieve the specific goals in its areas of responsibility. This includes qualified staff and appropriate IT/management information processes. The function should be organised in an appropriate manner to achieve its goals.

8.3.14 The head of each control function should review regularly the adequacy of the function's resources and request adjustments from Senior Management as necessary. Where the head of a control function has a major difference of opinion with Senior Management on the resources needed, the head of the control function should bring the issue to the Board or relevant Board Committee for resolution.

8.3.15 Persons who perform control functions should be suitable for their role and meet any applicable professional qualifications and standards. Higher expectations apply to the head of each control function. Persons who perform control functions should receive regular training relevant to their role to remain up to date on the developments and techniques related to their areas of responsibility.

**Board access and reporting by the control functions; Board assessment of control functions**

8.3.16 The Board should grant the head of each control function the authority and responsibility to report periodically to it or one of its committees. The Board should determine the frequency and depth of such reporting so as to permit timely and meaningful communication and discussion of material matters. The reporting should include, among other things:

- information as to the function’s strategy and longer term goals and the progress in achieving these;
- annual or other periodic operational plans describing shorter term goals and the progress in achieving these; and
- resources (such as personnel, budget, etc.), including an analysis on the adequacy of these resources.

8.3.17 In addition to periodic reporting, the head of each control function should have the opportunity to communicate directly and to meet periodically (without the presence of management) with the Chair of any relevant Board committee (eg Audit or Risk Committee) and/or with the Chair of the full Board. The Board should periodically assess the performance of each control function. This may be done by the full Board, by the Chair of the Board, by the relevant Board committee or by the Chair of the relevant Board committee.
CF 8.3.c The group-wide supervisor requires the IAIG Board to ensure that the group-wide control functions:

- are not combined, unless exceptional circumstances apply;
- are subject to periodic review either by the group-wide internal audit function (for control functions other than internal audit) or an independent external party;
- have unrestricted access and periodically report to the IAIG Board or one of its committees; and
- have access to people and information, on a group-wide or legal entity level, to carry out their responsibilities.

CF 8.3.c.1 The group-wide supervisor should assess on a case-by-case basis whether the exceptional circumstances justify a combination of group-wide control functions on a time-limited basis.

CF 8.3.c.2 When assessing whether to allow for a combination of group-wide control functions, the group-wide supervisor should consider at least whether:

- the combination would give rise to potential conflicts of interest and how they could be resolved – either for affected individuals and/or the combined group-wide control functions (for example, where one group-wide control function has responsibilities for reviewing another);
- the individuals in charge of combined group-wide control functions would have the necessary availability or resources to perform efficiently the tasks related to both functions; and
- the combined group-wide control functions would undermine the ability of either function to fulfil its responsibilities in assisting the IAIG Board and Senior Management in maintaining adequate oversight across the IAIG. This risk is likely to be greater where control functions across different lines of defence are combined.

Risk management function

8.4 The supervisor requires the insurer to have an effective risk management function capable of assisting the insurer to:

- identify, assess, monitor, mitigate and report on its key risks in a timely way; and
- promote and sustain a sound risk culture.

8.4.1 A robust risk management function that is well positioned, resourced and properly authorised and staffed is an essential element of an effective risk management system. Within some insurers, and particularly at larger or more complex ones, the risk management function is typically led by a Chief Risk Officer.

Access and reporting to the Board by the risk management function
8.4.2 The risk management function should have access and provide written reports to the Board as required by the Board, typically on matters such as:

- an assessment of risk positions and risk exposures and steps being taken to manage them;
- an assessment of changes in the insurer's risk profile relative to risk appetite;
- where appropriate, an assessment of pre-defined risk limits;
- where appropriate, risk management issues resulting from strategic affairs such as corporate strategy, mergers and acquisitions and major projects and investments;
- an assessment of risk events and the identification of appropriate remedial actions.

8.4.3 The head of the risk management function should have the authority and obligation to inform the Board promptly of any circumstance that may have a material effect on the risk management system of the insurer.

Main activities of the risk management function

8.4.4 The risk management function should establish, implement and maintain appropriate mechanisms and activities including to:

- assist the Board and Senior Management in carrying out their respective responsibilities, including by providing specialist analyses and performing risk reviews;
- identify the individual and aggregated risks (actual, emerging and potential) the insurer faces;
- assess, aggregate, monitor and help manage and otherwise address identified risks effectively; this includes assessing the insurer’s capacity to absorb risk with due regard to the nature, probability, duration, correlation and potential severity of risks;
- gain and maintain an aggregated view of the risk profile of the insurer both at a legal entity and/or group-wide level;
- establish a forward-looking assessment of the risk profile;
- evaluate the internal and external risk environment on an ongoing basis in order to identify and assess potential risks as early as possible. This may include looking at risks from different perspectives, such as by territory or by line of business;
- consider risks arising from remuneration arrangements and incentive structures;
- conduct regular stress testing and scenario analyses as defined in ICP 16 (Enterprise Risk Management for Solvency Purposes);
- regularly provide written reports to Senior Management, Key Persons in Control Functions and the Board on the insurer’s
risk profile and details on the risk exposures facing the insurer and related mitigation actions as appropriate;

- document and report material changes affecting the insurer’s risk management system to the Board to help ensure that the system is maintained and improved; and

- conduct regular self-assessments and implement or monitor the implementation of any needed improvements.

**CF 8.4.a** The group-wide supervisor requires the Head of the IAIG to ensure that the group-wide risk management function, at least:

- coordinates and monitors consistent and effective implementation of risk management mechanisms and activities at the group-wide level and at the legal entity level;

- sets out expectations relating to the group-wide responsibilities and reporting of the risk management function of each legal entity within the IAIG, as applicable;

- sets policies and processes for effective interaction between the risk management functions of the Head of the IAIG and of the legal entities within the IAIG;

- assesses the group-wide risk management strategy, which is approved by the IAIG Board, and ensures that this risk management strategy, including supporting processes, is implemented at the group-wide level;

- annually plans and conducts an assessment of risks at the group-wide level, including those that arise from the legal entity and material business line level; and

- provides at least quarterly risk management reports to the IAIG Board or one of its committees.

**CF 8.4.b** The group-wide supervisor requires the group-wide risk management function to be independent from risk taking activities.

**Compliance function**

8.5 The supervisor requires the insurer to have an effective compliance function capable of assisting the insurer to i) meet its legal, regulatory and supervisory obligations and ii) promote and sustain a compliance culture, including through the monitoring of related internal policies.

8.5.1 The compliance function has a broader role than merely monitoring compliance with laws, regulations and supervisory requirements; monitoring compliance with internal policies and promoting and sustaining a compliance culture within the insurer are equally important aspects of this control function.

8.5.2 Compliance starts at the top. The Board is ultimately responsible for establishing standards for honesty and integrity throughout the insurer and for creating an effective corporate culture that emphasises them. This should include a code of conduct or other appropriate mechanism as evidence of the insurer’s commitment to comply with all applicable
laws, regulations, supervisory requirements and internal policies, and conduct its business ethically and responsibly.

8.5.3 As part of this commitment, the insurer has in place a robust and well positioned, resourced and properly authorised and staffed compliance function. Within some insurers, particularly larger or more complex ones, such a function is typically led by a Chief Compliance Officer.

Board access and reporting of the compliance function

8.5.4 The compliance function should have access and provide written reports to Senior Management, Key Persons in Control Functions and the Board on matters such as:

- an assessment of the key compliance risks the insurer faces and the steps being taken to address them;
- an assessment of how the various parts of the insurer (e.g., divisions, major business units, product areas) are performing against compliance standards and goals;
- any compliance issues involving management or persons in positions of major responsibility within the insurer, and the status of any associated investigations or other actions being taken;
- material compliance violations or concerns involving any other person or unit of the insurer and the status of any associated investigations or other actions being taken; and
- material fines or other disciplinary actions taken by any regulator or supervisor in respect of the insurer or any employee.

8.5.5 The head of the compliance function should have the authority and obligation to inform promptly the Chair of the Board directly in the event of any major non-compliance by a member of management or a material non-compliance by the insurer with an external obligation if in either case he or she believes that Senior Management or other persons in authority at the insurer are not taking the necessary corrective actions and a delay would be detrimental to the insurer or its policyholders.

Main activities of the compliance function

8.5.6 The compliance function should establish, implement and maintain appropriate mechanisms and activities including to:

- promote and sustain an ethical corporate culture that values responsible conduct and compliance with internal and external obligations; this includes communicating and holding training on an appropriate code of conduct or similar that incorporates the corporate values of the insurer, aims to promote a high level of professional conduct and sets out the key conduct expectations of employees;
- identify, assess, report on and address key legal and regulatory obligations, including obligations to the insurer's supervisor, and the risks associated therewith; such analyses should use risk and other appropriate methodologies;
• ensure the insurer monitors and has appropriate policies, processes and controls in respect of key areas of legal, regulatory and ethical obligation;

• hold regular training on key legal and regulatory obligations particularly for employees in positions of high responsibility or who are involved in high risk activities;

• facilitate the confidential reporting by employees of concerns, shortcomings or potential or actual violations in respect of insurer internal policies, legal or regulatory obligations, or ethical considerations; this includes ensuring there are appropriate means for such reporting;

• address compliance shortcomings and violations, including ensuring that adequate disciplinary actions are taken and any necessary reporting to the supervisor or other authorities is made; and

• conduct regular self-assessments of the compliance function and the compliance processes and implement or monitor needed improvements.

CF 8.5.a The group-wide supervisor requires the Head of the IAIG to ensure that the group-wide compliance function at least:

• coordinates and monitors consistent and effective implementation of compliance mechanisms and activities at the group-wide level and at the legal entity level;

• sets appropriate policies and processes regarding the legal and regulatory obligations of the IAIG and its legal entities;

• assesses the material legal and regulatory obligations and compliance risks of the IAIG, and the steps being taken to fulfil or address them, at least annually and as required by the Board;

• supports the IAIG Board in fostering an effective corporate culture throughout the IAIG;

• assesses how the IAIG itself is, and the legal entities within the IAIG are, performing against group-wide compliance standards and goals; and

• provides at least quarterly written reports on its activities to the IAIG’s Board or one of its committees.

Actuarial function

8.6 The supervisor requires the insurer to have an effective actuarial function capable of evaluating and providing advice regarding, at least, technical provisions, premium and pricing activities, capital adequacy, reinsurance and compliance with related statutory and regulatory requirements.
8.6.1 A robust actuarial function that is well positioned, resourced and properly authorised and staffed is essential for the proper operation of the insurer. It plays a key role as part of the insurer’s overall systems of risk management and internal controls.

Board access and reporting of the actuarial function

8.6.2 The actuarial function should have access to and periodically report to the Board on matters such as:

- any circumstance that may have a material effect on the insurer from an actuarial perspective;
- the adequacy of the technical provisions and other liabilities;
- distribution of profits to participating policyholders;
- stress testing and capital adequacy assessment with regard to the prospective solvency position of the insurer; and
- any other matters as determined by the Board.

8.6.3 Written reports on actuarial evaluations should be made to the Board, Senior Management, or other Key Persons in Control Functions or the supervisor as necessary or appropriate or as required by legislation.

Main activities of the actuarial function

8.6.4 The actuarial function evaluates and provides advice to the insurer on matters including:

- the insurer’s insurance liabilities, including policy provisions and aggregate claim liabilities, as well as determination of reserves for financial risks;
- asset liability management with regard to the adequacy and the sufficiency of assets and future revenues to cover the insurer’s obligations to policyholders and capital requirements, as well as other obligations or activities;
- the insurer’s investment policies and the valuation of assets;
- an insurer’s solvency position, including a calculation of minimum capital required for regulatory purposes and liability and loss provisions;
- an insurer’s prospective solvency position by conducting capital adequacy assessments and stress tests under various scenarios, and measuring their relative impact on assets, liabilities, and actual and future capital levels;
- risk assessment and management policies and controls relevant to actuarial matters or the financial condition of the insurer;
- the fair treatment of policyholders with regard to distribution of profits awarded to participating policyholders;
- the adequacy and soundness of underwriting policies;
• the development, pricing and assessment of the adequacy of reinsurance arrangements;
• product development and design, including the terms and conditions of insurance contracts and pricing, along with estimation of the capital required to underwrite the product;
• the sufficiency, accuracy and quality of data, the methods and the assumptions used in the calculation of technical provisions;
• the research, development, validation and use of internal models for internal actuarial or financial projections, or for solvency purposes as in the ORSA; and
• any other actuarial or financial matters determined by the Board.

8.6.5 Where required, the actuarial function may also provide to the supervisor certifications on the adequacy, reasonableness and/or fairness of premiums (or the methodology to determine the same) and certifications or statements of actuarial opinion.

8.6.6 The supervisor should clearly define when such certifications or statements of actuarial opinion need to be submitted to the supervisor. When these are required to be submitted, the supervisor should also clearly define both the qualifications of those permitted to certify or sign such statements and the minimum contents of such an opinion or certification.

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**CF 8.6.a** The group-wide supervisor requires the Head of the IAIG to ensure that the group-wide actuarial function performs an overview of the group-wide actuarial activities, functions and risks emanating from insurance legal entities within the IAIG. This overview includes, at least:

- risk assessment and management policies and controls relevant to govern the activities of the group-wide actuarial function or financial condition;
- actuarial concerns related to any insurance legal entity within the IAIG, or the IAIG as a whole, as applicable;
- the IAIG’s solvency position, based on calculations of group-wide regulatory capital requirements and technical provisions;
- the IAIG’s prospective solvency position, based on capital adequacy assessments and stress tests, under various scenarios, and their relative impact on assets, liabilities, and actual and future capital levels;
- the adequacy of the IAIG’s reinsurance arrangements; and
- actuarial-related risk modelling in the IAIG’s Own Risk and Solvency Assessment (ORSA) and use of internal models.
CF 8.6.b The group-wide supervisor requires the Head of the IAIG to ensure that
the group-wide actuarial function:

- works with the actuarial functions at the insurance legal entity
  level to review actuarial information; and
- provides independent advice and at least annually reports to
  the IAIG Board or one of its committees on the insurance
  activities and risks posed to the IAIG.

Appointed actuary

8.6.7 Some jurisdictions may require an “appointed actuary”, “statutory
actuary”, or “responsible actuary” (referred to here as an “Appointed
Actuary”) to perform certain functions, such as determining or providing
advice on an insurer’s compliance with regulatory requirements for
 certifications or statements of actuarial opinion. The tasks and
responsibilities of the Appointed Actuary should be clearly defined and
should not limit or restrict the tasks and responsibilities of other
individuals performing actuarial functions.

8.6.8 The insurer should be required to report the Appointed Actuary’s
appointment to the supervisor.

8.6.9 The Appointed Actuary should not hold positions within or outside of the
insurer that may create conflicts of interest or compromise his or her
independence. If the Appointed Actuary is not an employee of the
insurer, the Board should determine whether the external actuary has
any potential conflicts of interest, such as if his or her firm also provides
auditing or other services to the insurer. If any such conflicts exist, the
Board should subject them to appropriate controls or choose another
Appointed Actuary.

8.6.10 If an Appointed Actuary is replaced, the insurer should notify the
supervisor and give the reasons for the replacement. In some
jurisdictions, such a notification includes statements from both the
insurer and the former Appointed Actuary as to whether there were any
disagreements with the former Appointed Actuary over the content of the
actuary’s opinion on matters of risk management, required disclosures,
scopes, procedures, or data quality, and whether or not any such
disagreements were resolved to the former Appointed Actuary’s
satisfaction.

8.6.11 In some jurisdictions, the Appointed Actuary also has the obligation to
notify the supervisor if he or she resigns for reasons connected with his
or her duties as an Appointed Actuary or with the conduct of the insurer’s
business and give the reasons for resigning. The Appointed Actuary
should also notify the supervisor and provide an explanation if his or her
appointment is revoked by the insurer.

8.6.12 The supervisor should have the authority to require an insurer to replace
an Appointed Actuary when such person fails to adequately perform
required functions or duties, is subject to conflicts of interest or no longer
meets the jurisdiction’s eligibility requirements.

Internal audit function
8.7 The supervisor requires the insurer to have an effective internal audit function capable of providing the Board with independent assurance in respect of the quality and effectiveness of the insurer’s corporate governance framework.

8.7.1 One of the oversight roles of the Board is to ensure that the information provided by the internal audit function allows the Board to effectively validate the effectiveness of the internal control system.

8.7.2 The internal audit function should provide independent assurance to the Board through general and specific audits, reviews, testing and other techniques in respect of matters such as:

- the overall means by which the insurer preserves its assets and those of policyholders, and seeks to prevent fraud, misappropriation or misapplication of such assets;
- the reliability, integrity and completeness of the accounting, financial and risk reporting information, as well as the capacity and adaptability of IT architecture to provide that information in a timely manner to the Board and Senior Management;
- the design and operational effectiveness of the insurer’s individual controls in respect of the above matters, as well as of the totality of such controls (the internal controls system);
- other matters as may be requested by the Board, Senior Management, the supervisor or the external auditor; and
- other matters which the internal audit function determines should be reviewed to fulfil its mission, in accordance with its charter, terms of reference or other documents setting out its authority and responsibilities.

Authority and independence of the internal audit function

8.7.3 To help ensure objectivity, the internal audit function is independent from management and other control functions and is not involved operationally in the business. The internal audit function’s ultimate responsibility is to the Board, not management. To help ensure independence and objectivity, the internal audit function should be free from conditions that threaten its ability to carry out its responsibilities in an unbiased manner. In carrying out its tasks, the internal audit function forms its judgments independently. If necessary, the internal audit function should consider the need to supplement its own assessment with third party expertise in order to make objective and independent decisions.

8.7.4 The Board should grant suitable authority to the internal audit function, including the authority to:

- access and review any records or information of the insurer which the internal audit function deems necessary to carry out an audit or other review;
- undertake on the internal audit function’s initiative a review of any area or any function consistent with its mission;
require an appropriate management response to an internal audit report, including the development of a suitable remediation, mitigation or other follow-up plan as needed; and

decline doing an audit or review, or taking on any other responsibilities requested by management, if the internal audit function believes this is inconsistent with its mission or with the strategy and audit plan approved by the Board. In any such case, the internal audit function should inform the Board or the Audit Committee and seek their guidance.

Board access and reporting of the internal audit function

8.7.5 The head of the internal audit function reports to the Board (or to any member who is not part of the management) or to the Audit Committee if one exists (or its Chair). In its reporting, the internal audit function should cover matters such as:

- the function’s annual or other periodic audit plan, detailing the proposed areas of audit focus, and any significant modifications to the audit plan;
- any factors that may be adversely affecting the internal audit function’s independence, objectivity or effectiveness;
- material findings from audits or reviews conducted; and
- the extent of management’s compliance with agreed upon corrective or risk mitigating measures in response to identified control deficiencies, weaknesses or failures, compliance violations or other lapses.

8.7.6 In addition to periodic reporting, the head of internal audit should be authorised to communicate directly, and meet periodically, with the head of the Audit Committee or the Chair of the Board without management present.

Main activities of the internal audit function

8.7.7 The audit function should carry out such activities as are needed to fulfil its responsibilities. These activities include:

- establishing, implementing and maintaining a risk-based audit plan to examine and evaluate alignment of the insurer's processes with their risk culture;
- monitoring and evaluating the adequacy and effectiveness of the insurer’s policies and processes and the documentation and controls in respect of these, on a legal entity and group-wide basis and on an individual subsidiary, business unit, business area, department or other organisational unit basis;
- reviewing levels of compliance by employees, organisational units and third parties with laws, regulations and supervisory requirements, established policies, processes and controls, including those involving reporting;
• evaluating the reliability, integrity and effectiveness of management information processes and the means used to identify, measure, classify and report such information;
• monitoring that identified risks are effectively addressed by the internal control system;
• evaluating the means of safeguarding insurer and policyholder assets and, as appropriate, verifying the existence of such assets and the required level of segregation in respect of insurer and policyholder assets;
• monitoring and evaluating the effectiveness of the insurer's control functions, particularly the risk management and compliance function; and
• coordinating with the external auditors and, to the extent requested by the Board and consistent with applicable law, evaluating the quality of performance of the external auditors.

8.7.8 In carrying out the above tasks, the internal audit function should ensure all material areas of risk and obligation of the insurer are subject to appropriate audit or review over a reasonable period of time. Among these areas are those dealing with:

• market, underwriting, credit, liquidity, operational, conduct of business, as well as reputational issues derived from exposure to those risks;
• accounting and financial policies and whether the associated records are complete and accurate;
• extent of compliance by the insurer with applicable laws, regulations and supervisory requirements from all relevant jurisdictions;
• intra-group transactions, including intra-group risk transfer and internal pricing;
• adherence by the insurer to the insurer’s remuneration policy;
• the reliability and timeliness of escalation and reporting processes, including whether there are confidential means for employees to report concerns or violations and whether these are properly communicated, offer the reporting employee protection from retaliation, and result in appropriate follow up; and
• the extent to which any non-compliance with internal policies or external legal or regulatory obligations is documented and appropriate corrective or disciplinary measures are taken including in respect of individual employees involved.

8.7.9 Subject to applicable laws on record retention, the internal audit function should keep records of all areas and issues reviewed so as to provide evidence of these activities over time.
CF 8.7.a The group-wide supervisor requires the IAIG Board to ensure that the group-wide internal audit function provides independent assessment and assurance to the IAIG Board regarding, at least, the:

- group-wide policies, processes, and controls;
- overall means by which the IAIG preserves its assets, and those of policyholders, and seeks to prevent fraud, misappropriation or misapplication of such assets;
- reliability, integrity and completeness of the accounting, financial, management, information technology systems and risk reporting information;
- capacity and adaptability of information technology systems to provide information in an accurate and timely manner to the IAIG Board and Senior Management; and
- design and operational effectiveness of the group-wide risk management and internal controls systems, both individually and overall.

CF 8.7.a.1 The group-wide internal audit function coordinates with the internal audit functions and external auditors of the legal entities within the IAIG when providing assessment and assurance to the IAIG Board.

Outsourcing of material activities or functions

8.8 The supervisor requires the insurer to retain at least the same degree of oversight of, and accountability for, any outsourced material activity or function (such as a control function) as applies to non-outsourced activities or functions.

8.8.1 Outsourcing should not materially increase risk to the insurer or materially adversely affect the insurer’s ability to manage its risks and meet its legal and regulatory obligations.

8.8.2 The Board and Senior Management remain responsible in respect of functions or activities that are outsourced.

8.8.3 The supervisor should require the Board to have review and approval processes for outsourcing of any material activity or function and to verify, before approving, that there was an appropriate assessment of the risks, as well as an assessment of the ability of the insurer’s risk management and internal controls to manage them effectively in respect of business continuity. The assessment should take into account to what extent the insurer’s risk profile and business continuity could be affected by the outsourcing arrangement.

8.8.4 The supervisor should require insurers which outsource any material activity or function to have in place an appropriate policy for this purpose, setting out the internal review and approvals required and providing guidance on the contractual and other risk issues to consider. This includes considering limits on the overall level of outsourced activities at the insurer and on the number of activities that can be outsourced to the same service provider. Because of the particularly important role that
control activities and control functions play in an insurer’s corporate governance framework, the supervisor should consider issuing additional requirements for their outsourcing or dedicating more supervisory attention to any such outsourcing.

8.8.5 Outsourcing relationships should be governed by written contracts that clearly describe all material aspects of the outsourcing arrangement, including the rights, responsibilities and expectations of all parties. When entering into or varying an outsourcing arrangement, the Board and Senior Management should consider, among other things:

- how the insurer’s risk profile and business continuity will be affected by the outsourcing;
- the service provider’s governance, risk management and internal controls and its ability to comply with applicable laws and regulations;
- the service providers’ service capability and financial viability; and
- succession issues to ensure a smooth transition when ending or varying an outsourcing arrangement.

8.8.6 In choosing an outsourcing provider, the Board or Senior Management should be required to satisfy themselves as to the expertise, knowledge and skills of such provider.

8.8.7 Outsourcing arrangements should be subject to periodic reviews. Periodic reports should be made to management and the Board.

### CF 8.8.a
The group-wide supervisor requires the Head of the IAIG to have:

- a policy which takes into account the potential impact on the IAIG of outsourcing of any material group-wide activity or function, sets out the internal review and approvals required, and provides guidance on the contractual and other risk issues to consider; and
- written contracts that describe all material aspects of the outsourcing arrangement, including the rights, responsibilities and expectations of all parties.

### CF 8.8.b
When choosing a service provider (either internal or external) for a material group-wide activity or function that is to be outsourced, the group-wide supervisor requires the Head of the IAIG to:

- assess the potential service provider’s ability and capacity to deliver the outsourced activities or functions;
- perform due diligence on the service provider with respect to explicit or potential conflicts of interest that would jeopardise the fulfilment of the needs of the IAIG; and
- ensure that the service provider has the necessary resources to perform the outsourced activities or functions in a proper and reliable way, as well as adequate contingency plans in
place to deal with emergency situations or business disruptions.

**CF 8.8.b.1** Activities or functions may be outsourced to an internal service provider (i.e., a legal entity which is part of the IAIG) or an external service provider. In the case of an internal service provider, the assessment and due diligence process may be different from the case of an external service provider. For example, if the internal service provider has already been assessed recently, some aspects of the assessment may not need to be repeated. Even though the assessment process used may vary between an internal or external service provider, it should be equally robust.

**CF 8.8.c** The group-wide supervisor requires the Head of the IAIG to ensure that outsourcing (either internal or external) of a group-wide activity or function does not impede effective supervision of the Head of the IAIG.

**CF 8.8.d** The group-wide supervisor requires the Head of the IAIG to carry out a periodic review of the cumulative risks of outsourced activities and functions and address identified risks.
ICP 9 Supervisory Review and Reporting

The supervisor uses off-site monitoring and on-site inspections to: examine the business of each insurer; evaluate its financial condition, conduct of business, corporate governance framework and overall risk profile; and assess its compliance with relevant legislation and supervisory requirements. The supervisor obtains the necessary information to conduct effective supervision of insurers and evaluate the insurance market.

Introductory Guidance

9.0.1 This ICP focuses on the general processes and procedures supervisors should have in place with respect to supervisory review and reporting. For the purpose of this ICP, off-site monitoring and on-site inspections are collectively referred to as “supervisory review”. Aspects of what supervisors may require or assess as part of supervisory review and reporting on specific areas (such as solvency, governance, conduct of business) are dealt with in other ICPs with respect to those ICPs’ specific areas of focus.

9.0.2 Supervision is a dynamic process that includes:

- developing and implementing a framework for supervisory review and reporting;
- developing and executing supervisory plans for insurers;
- analysis of reported and other relevant information;
- feedback and dialogue between the supervisor and insurers;
- intervention, including any preventive/corrective measures or sanctions, where necessary;
- follow-up (including updating the supervisory framework and/or adjusting the frequency and intensity of assessment under supervisory plans); and
- cooperation and coordination with other relevant supervisors and authorities where necessary.

CF 9.0.a The group-wide supervisor engages with the Head of the IAIG and, in cooperation with other involved supervisors, carries out a supervisory review to assess the IAIG’s compliance with relevant legislation and supervisory requirements applicable at the level of the Head of the IAIG.

CF 9.0.a.1 This supervisory review may be conducted within the supervisory college (see ComFrame material under ICP 25 Supervisory Cooperation and Coordination).

CF 9.0.a.2 Cooperation with other involved supervisors includes them providing relevant information concerning the insurance legal entities within the IAIG that they supervise. It is the responsibility of the group-wide supervisor to assess the IAIG’s compliance with the relevant
9.1 The supervisor has a documented framework which outlines its approach for supervisory review and reporting. The supervisor reviews periodically that this framework remains effective and adequate.

9.1.1 While the framework should encompass all insurers within a jurisdiction, it should be sufficiently flexible with varying supervisory review and reporting requirements that allow for taking a risk-based approach. For example, the supervisory processes and activities which are appropriate for a complex, internationally active insurer may be different than those for a small, local insurer.

9.1.2 The supervisor should have documented procedures and/or guidelines for consistent and regular supervisory review and reporting at an appropriate level of depth.

9.1.3 The supervisor should be able to process data in a timely and effective way and have processes and procedures to collect and store reported data securely in an electronic format. The framework should have the necessary protections for confidential information in the possession of the supervisor and for the sharing of information (see ICP 2 Supervisor and ICP 3 Information Sharing and Confidentiality Requirements).

9.1.4 The framework should enable the supervisor to coordinate on-site inspection and off-site monitoring activities. The supervisor should document the results of these activities in such a way that they are accessible and comprehensible to all involved staff.

9.1.5 The supervisor should establish both qualitative and quantitative methods for assessing insurers, in a consistent manner and on an ongoing basis. The supervisor should develop monitoring tools to identify potential risks within or affecting the insurer or its customers in a timely manner.

9.1.6 The framework should enable the supervisor to evaluate the insurer’s business, financial condition, conduct of business and corporate governance framework to determine the insurer’s overall risk profile. In order to achieve this objective, the supervisor should have an understanding of at least the insurer’s:

- current and prospective solvency, including assets and liabilities and off-balance sheet commitments;
- capital resources management;
- technical operations (eg actuarial methods, underwriting policy, reinsurance policy);
- treatment of customers and whether any activities being engaged in are not fair, lawful or proper;
- corporate culture, business objectives and strategies and business models;
- the systems of risk management and internal controls;
• organisational structure; and

• compliance with supervisory requirements.

9.1.7 The supervisor should assess the insurer’s enterprise risk management framework for the identification and quantification of risks, and evaluate whether business activities and/or internal practices/processes reflect the insurer’s risk assessment. The supervisor should compare the risk profile of the insurer with its risk-carrying capacity and seek to detect issues that may adversely affect its capacity to meet obligations towards policyholders. The framework should enable the supervisor to analyse trends and compare risk assessments including against any stress test outcomes.

9.1.8 The framework should include assessments of the risks to which insurers are exposed and the risks which insurers may pose to policyholders, the insurance sector and financial stability. These assessments should include risks which may lead to an insurer’s distress or disorderly failure or which may be transmitted through collective activities or exposures of a number of insurers and that may have a serious negative impact on financial stability (see ICP 24 Macroprudential Supervision).

9.1.9 The framework should include sufficiently comprehensive and regular communication between the supervisor and insurers. This communication should involve senior level representatives as well as specialised areas within both the supervisor and insurers, and for insurance groups, may include contact with non-regulated and parent entities. Additionally, there should be appropriate communication channels between the supervisor and the external auditors for the exchange of information relevant to carrying out their respective statutory responsibilities.

9.1.10 The framework should promote pro-active and early intervention by the supervisor, in order to enable the insurer to take appropriate action to mitigate risks and/or minimise current or future problems.

Review of the Framework

9.1.11 The supervisor’s review of its framework should pay due attention to the evolving risks which may be posed by insurers and to risks to which insurers may be exposed.

9.1.12 As part of the framework review, the supervisor should confer regularly internally as well as externally with other relevant authorities and stakeholders so that all relevant information is being appropriately assessed and analysed, and to facilitate the identification of potential new risks or emerging market trends that the framework may need to address. While the framework should be updated accordingly, the supervisor should be mindful that such updates are not done so frequently or in a manner that causes unnecessary disruption to the supervisory process and/or excessive costs to the supervisor and insurers.

9.1.13 The framework should be suitably flexible so that it may adapt easily and in a timely manner to domestic and global developments in, for example, legislation, the insurance and broader financial markets, or international standards.
9.1.14 The framework of the group-wide supervisor should take into account all entities identified within the scope of the insurance group (see ICP 23 Group-wide Supervision). While insurance groups may have different approaches to governance structures – either more centralised or more decentralised – the framework should include appropriate tools for supervisory review and reporting for all relevant entities (see Issues Paper on Approaches to Group Corporate Governance).

9.1.15 Although the group-wide supervisor may not have the power to conduct supervisory review and reporting of non-regulated entities, it should assess, at least, the potential adverse impact of such non-regulated entities on the group.

9.1.16 Similarly, where the group-wide supervisor does not have the power to conduct supervisory review and reporting of a group legal entity in another jurisdiction, it should communicate and coordinate with the other involved supervisor accordingly. For example, the group-wide supervisor could approach the other involved supervisor to propose a joint on-site inspection or recommend that the other involved supervisor undertake such an inspection, when deemed necessary.

9.2 As part of the supervisory framework, the supervisor develops supervisory plans which set priorities and determine the appropriate depth and level of off-site monitoring and on-site inspection activity.

9.2.1 A supervisory plan is a tool for supervisors to determine the frequency, scope and depth of supervisory review activities. It could be generic (e.g. addressing categories or groups of insurers) or specific (addressing individual insurers).

9.2.2 In establishing a supervisory plan, the supervisor should assess and determine the key areas of risk to which insurers are exposed or risks which insurers may pose, using its judgement and the information, methodologies and tools at its disposal.

9.2.3 The circular nature of the supervisory framework provides a variety of inputs to help develop and/or adjust supervisory plans. For example, market analyses, internal models, insurers’ own risk and solvency assessments (ORSA), horizontal reviews, stress/scenario testing, previous risk and conduct assessments, work of external auditors and information gathered as a result of supervisory reporting requirements provide information the supervisor should use as input in determining the scope and frequency of off-site monitoring and on-site inspections.

**Group-wide supervisory plan and risk assessment**

CF 9.2.a The group-wide supervisor’s supervisory plan for an IAIG includes a group-wide risk assessment that is conducted at least annually.

CF 9.2.a.1 The group-wide risk assessment of an IAIG should be conducted with inputs from the supervisory process.

CF 9.2.a.2 The group-wide supervisor should consider the results of the IAIG’s enterprise risk management framework including its ORSA assessment, as part of the group-wide risk assessment.
CF 9.2.a.3  The group-wide supervisor should use information gathered on legal entities within the IAIG from other involved supervisors as another basis for the assessment of group-wide risk. Where other involved supervisors identify risks that may be relevant to the supervision of the IAIG at the group level, they should share their individual risk assessment.

CF 9.2.a.4  The group-wide supervisor should consider inputs from other relevant supervisors not involved in the direct supervision of the IAIG such as macro-prudential analysis, anti-money laundering or combatting the financing of terrorism.

**Peer-group analysis**

CF 9.2.a.5  To the extent practicable and where useful, the group-wide supervisor should conduct an analysis of the IAIG’s peers as part of the group-wide risk assessment, in cooperation with group-wide supervisors of other IAIGs. Information in the public domain should be used for the purposes of the peer-group analysis. The group-wide supervisor may also use non-public information provided by other supervisors. If sharing non-public information for the purpose of the peer-group analysis, the group-wide supervisor should be conscious of the risk of sharing information that in certain situations could compromise the competitive advantage of the IAIG’s peers. The group-wide supervisor should consider whether it is appropriate to anonymise information shared.

CF 9.2.a.6  In conducting peer group analysis, the group-wide supervisor should consider issues such as:

- the similarity of business models and geographical scope of IAIGs;
- the size, type and structure of IAIGs; and
- internal IAIG practices and governance, including risk management.

CF 9.2.a.7  It is the group-wide supervisor’s responsibility to decide to what extent the outcomes of peer-group analysis are shared with other involved supervisors. Peer-group analysis is subject to confidentiality requirements (see ICP 3 Information Sharing and Confidentiality Requirements).

CF 9.2.b  The group-wide supervisor includes in its group-wide risk assessment of an IAIG, at least, an evaluation of the following:

- the complexity of the IAIG’s group structure and the resulting risks to effective group-wide supervision;
- the capital adequacy and the availability of capital to meet group-wide capital requirements taking into account the regulatory capital requirements for each insurance legal entity within the IAIG; and
• the impact of the complexity of the IAIG’s group structure on the effectiveness of its group-wide corporate governance framework.

CF 9.2.b.1 In conducting the group-wide risk assessment, the group-wide supervisor should consider:

- the alignment between the IAIG's competitive position, business plans and strategy, risk appetite, and risk-carrying capacity;
- the IAIG’s approach to its legal and regulatory obligations, its product distribution model and its proposals for dealing with specific areas of risk;
- non-regulated and non-financial legal entities within the IAIG;
- the adequacy and outcomes of the IAIG’s stress testing and scenario analysis (see ICP 16 Enterprise Risk Management for Solvency Purposes);
- the IAIG’s ability to meet policyholder obligations in both the near and long-term within the context of the risks arising from the macro environment in which the IAIG’s operates; and
- the potential impact that the IAIG’s distress or disorderly failure would have on policyholders, the insurance sector, and financial stability, as well as the impact from the IAIG’s contribution to collective activities or exposures that may have a serious negative impact on financial stability.

Complexity

CF 9.2.b.2 In conducting the group-wide risk assessment, the group-wide supervisor should consider:

- aggregated risk exposures that the IAIG has towards external counterparties, which can arise from direct and indirect exposures, on-balance and off-balance sheet items, regulated and non-regulated legal entities within the IAIG, the same or different financial sectors across the IAIG, or a combination or interaction of such exposures. The group-wide supervisor should evaluate if the Head of the IAIG has adequate oversight and has implemented an adequate risk management system to assess its aggregated credit, market, insurance and liquidity risk concentrations. Such risk concentrations should be viewed in the context of single or closely related drivers of risk that may have material impact on the IAIG;
- increased operational risk where the IAIG relies on significant cross-border services or support. Such cross-border activity may also increase the complexity of recovery and resolution planning. The group-wide supervisor should evaluate the effectiveness of the IAIG’s
policies, processes and systems, and assess whether the IAIG has adequate business continuity plan arrangements to mitigate such cross-border operational risk; and

• significant intra-group transactions which can give rise to contagion effects within the IAIG, or result in a circumvention of sectoral regulatory requirements. The group-wide supervisor should evaluate whether the Head of the IAIG has adequate oversight over all material intra-group transactions.

Capital adequacy

CF 9.2.b.3 In conducting the group-wide risk assessment, the group-wide supervisor should assess the adequacy of an IAIG’s capital position against group capital standards applicable at the level of the Head of the IAIG. The role of the group-wide supervisor in conducting and coordinating this assessment is particularly important in cases where the IAIG has a mixture of insurance, banking and securities sector operations.

CF 9.2.b.4 In conducting the group-wide risk assessment, the group-wide supervisor should identify situations that may give rise to double or multiple gearing. Such situations may occur within IAIGs which are not fully consolidated and when one legal entity holds regulatory capital issued by another entity within the IAIG, where the issuer is permitted to include the capital in meeting its own regulatory requirements. These situations can result in an overstatement of group capital. The group-wide supervisor should require that the capital adequacy assessments of the IAIG exclude intra-group holdings of regulatory capital if not performed on a fully consolidated basis.

CF 9.2.b.5 In conducting the group-wide risk assessment, the group-wide supervisor, in cooperation with other involved supervisors, should assess the fungibility of capital (its ability to absorb losses arising anywhere in the IAIG as needed). The group-wide supervisor should take into account regulatory, legal and other requirements that may affect the IAIG’s ability to transfer capital between entities, sectors and jurisdictions, both in normal circumstances and in a crisis.

Non-regulated and non-financial legal entities

CF 9.2.b.6 In conducting the group-wide risk assessment, the group-wide supervisor should consider the activities undertaken by non-regulated legal entities within the IAIG by assessing issues such as:

• the potential contagion risks arising from the activities of non-regulated legal entities due to interdependencies or exposures between the insurance legal entities and the non-regulated legal entities within the IAIG;

• the competence of the IAIG Board and Senior Management in understanding and managing the risks arising from the non-regulated legal entities, particularly if these entities are significant to the group;
• the strength of the group capital adequacy to support the insurance legal entities. Non-regulated legal entities’ contribution to the group capital adequacy could be assessed by calculation of a proxy capital requirement as if the legal entity were regulated or through deduction of the group’s interest in the non-regulated legal entity; and
• where risk has been transferred from regulated to non-regulated legal entities within the IAIG, the group-wide supervisor in cooperation with supervisors of the regulated entities should look through to the overall quantum and quality of assets in the non-regulated entities. The risk assessment should address third party participations and minority interests.

**Stress testing**

CF 9.2.b.7 In conducting the group-wide risk assessment, the group-wide supervisor should evaluate the results of group-wide stress tests that the IAIG performed.

**Macroprudential analysis**

CF 9.2.b.8 In conducting the group-wide risk assessment, the group-wide supervisor, with input from other involved supervisors, should consider the current and forecasted business and the macroeconomic environment in the material jurisdictions in which the IAIG operates. The group-wide supervisor should assess the cumulative potential impact from this on the operations of the IAIG as well as the impact of the IAIG’s distress, disorderly failure, or its contribution to collective activities or exposures, on financial stability. This analysis by the group-wide supervisor should also be incorporated into forward-looking stress testing to identify possible events or changes in market conditions.

### 9.3 The supervisor reviews outsourced material activities or functions to the same level as non-outsourced material activities or functions.

9.3.1 The supervisor should review outsourced material activities or functions through the insurer itself, but should also obtain information from, and conduct on-site inspections of, entities engaged in providing outsourced activities or functions for the insurer, where necessary.

9.3.2 The supervisory review process for outsourced material activities or functions may differ from the process used for non-outsourced activities or functions, provided that the supervisory outcomes are met.

9.3.3 Agreements between the insurer and entities providing the outsourced material activities or functions should be drawn up in such a way that the supervisor’s ability to conduct its review is not restricted.

**Supervisory reporting**

### 9.4 The Supervisor:

• establishes documented requirements for the regular reporting of qualitative and quantitative information from all insurers licensed in its jurisdiction;
• defines the scope, content and frequency of the information to be reported;
• sets out the relevant accounting and auditing standards to be used;
• requires that an external audit opinion is provided on annual financial statements;
• requires insurers to report on any material changes or incidents that could affect their condition or customers;
• requires insurers to correct inaccurate reporting as soon as possible; and
• requires more frequent reporting and/or additional information from insurers as needed.

9.4.1 Supervisory reporting requirements should apply to all insurers licensed in a jurisdiction, and form the general basis for off-site monitoring. Supervisory reporting requirements are a reflection of the supervisor’s needs and will thus vary by jurisdiction according to overall market structure and conditions and by insurer according to its nature, scale and complexity.

9.4.2 In setting supervisory reporting requirements, the supervisor may make a distinction for foreign insurers who are allowed to conduct insurance activities within the jurisdiction by way of a local branch or subsidiary or on a cross-border provision of services basis.

9.4.3 The supervisor should require insurers to report both quantitative and qualitative information, including at least:

• financial reports, which include at least a balance sheet and income statement as well as a statement of comprehensive income if appropriate;
• an external audit opinion on annual financial statements;
• off-balance sheet exposures;
• material outsourced functions and activities;
• a description of the insurer’s organisational structure, corporate governance framework and risk management and internal control systems; and
• information on complaints, claims, surrenders and lapses.

9.4.4 The supervisor should require insurers to utilise a consistent and clear set of instructions and definitions for any element in required reports that is not self-evident, in order to maximise comparability.

9.4.5 The supervisor may require that certain reports and information, such as solvency ratios or technical provisions, are subject to independent (internal or external) review, including audit and/or actuarial review.

9.4.6 While the supervisor sets out the relevant accounting and auditing standards to be used for supervisory reporting, the actual standards are generally established by a party other than the supervisor. To help
accounting and auditing standards reflect the nature of insurance business, the supervisor could provide guidance and practices to be used for areas such as fair value estimations and technical provisions.

9.4.7 The external audit of the annual financial statements should be conducted in accordance with auditing standards that are generally accepted internationally.

9.4.8 The supervisor should consider using the work of external auditors in order to support the supervisory review process. For example, the supervisor may utilize the external audits to identify: internal control weaknesses and possible audit material risks; issues resulting from regulatory and accounting changes; changes in insurance and financial risks; and issues encountered in applying the audit approach.

9.4.9 The supervisor should require the external auditor to report matters that are likely to be of material significance without delay. Such matters would include (indication of) material fraud and regulatory breaches or other significant findings identified in the course of the audit. Such information should be provided to the supervisor without the need for prior consent of the insurer and the external auditor should be duly protected from liability for any information disclosed to the supervisor in good faith.

9.4.10 Depending on the nature, scale and complexity of the insurer, more frequent reporting and/or additional information may be requested from specific insurers on a case-by-case basis.

9.4.11 The supervisor should require that information on changes that could materially impact the insurer’s risk profile, financial position, organisational structure, governance or treatment of its customers is provided by the insurer in a timely manner.

9.4.12 The supervisor periodically reviews its reporting requirements to ascertain that they still serve their intended objectives and to identify any gaps which need to be filled. Assessing the results of off-site monitoring and on-site inspections may help inform such a review.

**Group Perspectives**

9.4.13 The supervisor should require an insurance legal entity which is part of an insurance group to describe its group reporting structure, and to provide timely notification of any material changes to that structure and significant changes or incidents that could affect the soundness of the insurance group. The description of the reporting structure should include information on the relationships between entities within the insurance group, and on the nature and volume of material intra-group transactions. The supervisor may require information on the impact on the insurance legal entity of being part of an insurance group.

9.4.14 The supervisor may request and obtain relevant information about any entity within an insurance group, subject to applicable legal provisions and coordination with the supervisors of affected jurisdictions.

9.4.15 The group-wide supervisor should establish its supervisory reporting requirements on a group-wide basis in coordination with the other involved supervisors. Such coordination may help the group-wide supervisor understand what information is being reported and avoid any
gaps as well as facilitate the submission of information on group entities in other jurisdictions.

9.4.16 In order to better understand the group and its risks, the group-wide supervisor should require the group to submit information on the group structure, business operation and financial position of material entities within the insurance group and relationship among entities within the insurance group, including participation in other group entities and material intra-group transactions.

CF 9.4.a The group-wide supervisor requires the Head of the IAIG to report the reference ICS and, at the option of the group-wide supervisor, any additional reporting related to the ICS.

CF 9.4.a.1 Reporting to the group-wide supervisor should be on a confidential basis for the purpose of discussion in the supervisory college.

Off-site monitoring

9.5 The supervisor monitors insurers on an ongoing basis, based on communication with the insurer and analysis of information obtained through supervisory reporting as well as market and other relevant information.

9.5.1 The supervisor should be proactive and forward-looking in conducting effective off-site monitoring, and not rely only on historical data. The supervisor should analyse information obtained in a timely manner.

9.5.2 The results of off-site monitoring should influence the supervisory plan and help determine the content, nature, timing and frequency of on-site inspections. Off-site monitoring may also enable the early detection of problems so that prompt and appropriate supervisory responses can be taken before such problems become more serious.

9.5.3 Analysis by the supervisor may provide a deeper understanding of developing trends affecting an insurer and its customers. Analysis by business lines, customer grouping and/or distribution channels may provide insights into the insurer’s overall risk profile.

9.5.4 The supervisor should establish and follow documented procedures for the analysis and monitoring of the supervisory reporting that it receives. These may be conducted by individual supervisory staff using monitoring tools and/or specialised resources, as appropriate.

9.5.5 Examples of ways in which this Standard and its corresponding guidance can be pursued include the following [see text in Annex].

On-site inspection

9.6 The supervisor sets the objective, scope and timing for on-site inspections of insurers, develops corresponding work programmes and conducts such inspections.

9.6.1 On-site inspections help the supervisor to identify strengths and weaknesses within an insurer, and to assess and analyse the risks to which an insurer and its customers are exposed.
9.6.2 On-site inspections may supplement the analysis from off-site monitoring and provide the supervisor with the opportunity to verify information it has received. On-site inspection may also help detect problems that may not be apparent through off-site monitoring. It is important that on-site inspections are coordinated with off-site monitoring to increase efficiency and avoid duplication of work.

9.6.3 On-site inspections should be tailored to the particular insurer and its risks. However, an on-site inspection work programme should remain flexible since new priorities might arise.

9.6.4 The on-site inspection work programme should take account of the insurer’s distribution model, the nature, size and profile of its customer base and its relative importance in the market. On-site inspections should be more frequent and more in-depth for insurers which are in a difficult financial position or where there is concern that their business practices pose a high risk of negative customer outcomes.

9.6.5 The supervisor may use independent experts (see ICP 2 Supervisor) to conduct part of an on-site inspection, for instance when additional resources or specific expertise is needed.

9.6.6 The supervisor can conduct on-site inspections on either a broad or targeted basis. The purpose of a broad on-site inspection is to assess the overall condition, activities and risk-profile of the insurer. A targeted on-site inspection is focused on a specific area or areas of an insurer, such as a particular key activity or process. Targeted on-site inspections can also be carried out across a number of insurers based on a specific theme, activity or risk (sometimes called “thematic reviews”). Targeted on-site inspections can be very effective in focusing supervisory resources quickly on those areas requiring immediate attention. If a targeted on-site inspection leads to other areas of supervisory concern, the supervisor may determine that a broad on-site inspection is necessary.

9.6.7 Advance notice is normally given to the insurer before the supervisor conducts an on-site inspection so that both parties may plan accordingly. However, the supervisor may decide not to provide advance notice in certain circumstances.

9.6.8 Examples of ways in which this Standard and its corresponding guidance can be pursued include the following [see text in Annex].

| CF 9.6.a | The group-wide supervisor performs on-site inspections at the level of the Head of the IAIG. |
| CF 9.6.a.1 | The group-wide supervisor’s on-site inspections should consider group-wide activities and major risks that impact legal entities within the IAIG. |
| CF 9.6.a.2 | During on-site inspections, the group-wide supervisor should have access to the IAIG Board, Senior Management and Key Persons in Control Functions responsible for the group-wide functions wherever these functions are performed. Where the group-wide functions are performed by an insurance legal entity within the IAIG, which is outside the jurisdiction of the group-wide supervisor, the group-wide... |
supervisor should inform the relevant other involved supervisor prior to approaching this insurance legal entity as part of the on-site inspection carried out at the level of the Head of the IAIG.

CF 9.6.a.3 Other involved supervisors should inform the group-wide supervisor of significant planned on-site inspections and communicate the main findings to the supervisory college where they are material to the IAIG or to another insurance legal entity within the IAIG.

CF 9.6.b Where appropriate, the group-wide supervisor, or other involved supervisors with reasonable supervisory interest, join on-site inspections of an insurance legal entity in another jurisdiction, coordinated by the relevant involved supervisor, with prior consent from that supervisor.

CF 9.6.b.1 Relevant involved supervisors should consider organising a joint on-site inspection to address issues that are material to the IAIG or to another insurance legal entity within the IAIG. The relevant involved supervisor should share the main outcomes of a joint on-site inspection within the supervisory college.

### Supervisory feedback and follow-up

9.7 The supervisor discusses with the insurer as soon as practical any relevant findings of the supervisory review and the need for any preventive or corrective measures.

9.7.1 The supervisor should provide appropriate feedback in a timely manner to the insurer during the ongoing supervisory review process. The supervisor should issue in writing the findings of the review and the actions required. In many circumstances, the supervisor’s initial action will be to discuss the issue with the insurer, which may resolve the issue and require no further action. However some issues may require preventive or corrective measures, and in some cases imposing sanctions (see ICP 10 Preventive Measures, Corrective Measures and Sanctions).

9.7.2 Whether and how the insurer has subsequently addressed issues identified by the supervisor should be considered in the evaluation of the insurer and should be factored into the ongoing supervisory plan.

CF 9.7.a The group-wide supervisor communicates the results of the group-wide supervisory review of the IAIG, including the group-wide risk assessment, to the supervisory college and, as appropriate, to the Head of the IAIG.
Annex: Examples of ways in which Standards 9.5 and 9.6 and their corresponding guidance can be pursued include the following:

**A) The evaluation of the effectiveness of the insurer’s corporate governance framework, including its risk management and internal control systems, can be done through:**

- reviewing and analysing the minutes of the Board and its committees;
- examining communications provided by the auditors to the Board and/or the Audit Committee, such as the auditors’ reports;
- analysing information obtained from and/or received through direct engagement with the external auditor on substantial insights into the insurer’s corporate governance framework, control environment, and financial reporting;
- evaluating the suitability of significant owners by analysing the ownership structure and sources of finance/funding;
- evaluating the independence of the Board Members, the suitability of the Board Members, Senior Management and Key Persons in Control Functions, their effectiveness, and their ability to acknowledge improvement needs and correct mistakes (especially after such needs or mistakes have been identified by the insurer, its auditors, or the supervisor and after changes of management and in the Board);
- testing the insurer's internal policies, processes and controls in order to assess compliance with regulations and/or adequacy of these in light of the insurer's risk profile;
- testing the accounting procedures in order to assess accuracy of the financial and statistical information periodically sent to the supervisor and its compliance with the regulations; and
- evaluating the organisational structure and the management of the insurer.

**B) Analyses of the nature of the insurer’s activities can be done through:**

- analysing business lines, the type of products offered, policyholders and location of business;
- analysing the distribution model(s) used;
- meeting with the management to get information and a deeper understanding about current and future business plans;
- analysing material contracts;
- analysing the sales and marketing policies of the insurer, in particular, policy conditions and remuneration paid to the intermediaries; and
- evaluating the reinsurance cover and its security. In particular, the reinsurance cover should be appropriate with regard to the financial means of the insurer and the risks it covers.

**C) Analyses of the relationships with external entities can be done through:**

- analysing organisational charts, the group structures and the intragroup links;
- analysing the relationships with major investors and among branches and subsidiaries;
- analysing intragroup transactions, fees and other arrangements, including identifying instances of cross-subsidisation of businesses within a group or non-arm’s length fees and charges;
• analysing agreements with external service providers;
• identifying financial problems originating from an entity in the group to which the insurer belongs; and
• identifying of conflicts of interest arising from intra-group relationships or relationships with external entities.

D) Evaluation of the insurer’s financial condition can be done through:
• analysing audited financial statements and off-balance sheet commitments;
• analysing the settlement of claims and the calculation of technical provisions according to current regulations;
• analysing the operations and financial results by line of business;
• analysing the investment policy (including derivatives policy) and the assets held to cover the technical provisions;
• valuation of the insurer’s investments;
• assessing litigation in which the insurer is a party; and
• analysing the forecasted balance sheets and profit and loss accounts in relation to the most recent results and the management plans.

E) Assessment of the insurer’s fair treatment of customers can be done through:
• assessing the culture of the insurer in relation to customer treatment, including the extent to which the insurer’s leadership, governance, performance management and recruitment, complaints handling policies and remuneration practices demonstrate a culture of fair treatment to customers;
• assessing how conflicts of interests with customers are identified, managed and mitigated;
• reviewing how products are designed and distributed to ensure they fulfil the customers’ demands and needs;
• checking the adequacy, appropriateness and timeliness of the information and advice given to customers;
• reviewing the handling and timing of claims and other payments;
• reviewing the handling, frequency and nature of customer complaints, disputes and litigation; and
• reviewing any customer experience reports used by the insurer or from other sources, such as an ombudsman.
**ICP 10 Preventive Measures, Corrective Measures and Sanctions**

The supervisor:

- requires and enforces preventive and corrective measures; and
- imposes sanctions

which are timely, necessary to achieve the objectives of insurance supervision, and based on clear, objective, consistent, and publicly disclosed general criteria.

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**Introductory Guidance**

10.0.1 The supervisor should initiate escalating measures to prevent a breach of regulatory requirements by an insurer, respond to a breach of regulatory requirements by an insurer, and enforce those measures to ensure that the insurer responds to the supervisor's concerns. Preventive measures should be used to prevent a breach of regulatory requirements and corrective measures should be used to respond to a breach of regulatory requirements. Functionally, supervisors may take similar or identical actions as preventive or corrective measures. In addition, where a regulatory requirement has been violated, supervisors may use sanctions.

10.0.2 The supervisor should promptly and effectively deal with insurer non-compliance with regulatory requirements or supervisory measures that could put policyholders at risk, could pose a threat to financial stability, or could impinge on any other supervisory objectives. The more significant the threat to policyholders' interests or to financial stability, then the quicker the supervisor will need to act and to require action from the insurer, and the more significant the measures that may be required. By mitigating certain risks, preventive and corrective measures that are primarily intended to protect policyholders may also contribute to financial stability, by decreasing the probability and magnitude of any negative systemic impact.

10.0.3 Circumstances may arise when preventive or corrective measures are insufficient to prevent an insurer from being no longer viable, or likely to become no longer viable, and therefore need to exit the market or be resolved (see ICP 12 Exit from the Market and Resolution).

10.0.4 As part of the supervisory framework (see ICP 9 Supervisory Review and Reporting), the supervisor should consider in advance how to use preventive and corrective measures, enforcement of those measures, and the imposition of sanctions. A supervisor's framework should be documented to assist in the delivery of consistent supervision over time. It is crucial that the framework leaves room for the exercise of supervisory judgement and discretion, so flexibility should be allowed in the use of preventive measures, corrective measures and sanctions. In addition to general criteria, other parts of the framework on preventive measures, corrective measures and sanctions can also be released publicly, particularly where the supervisor feels that this additional transparency will lead to the market functioning more effectively. The decision-making processes that underpin the supervisory framework
should function in a way that allows the supervisor to take immediate action when necessary.

10.0.5 In some instances, the supervisor will need to work with other authorities or bodies in order to take or enforce supervisory measures or sanctions against an insurer. For example, some measures or sanctions will require the approval of a judicial body.

10.0.6 There are different methods by which supervisory outcomes can be achieved. The method chosen may vary depending on the jurisdiction’s legal framework. In some jurisdictions, one method is to accept an enforceable written agreement to do, or not to do, some thing or things from the insurer in question. The potential advantages of achieving an outcome by this route are that it can be quicker and less costly. This option can be used to achieve outcomes related to preventive or corrective measures or to sanctions.

**Group perspectives**

10.0.7 Measures or sanctions targeted at non-insurance legal entities within an insurance group may require the supervisor to work with other regulatory authorities.

10.0.8 The supervisor for an insurance legal entity within an insurance group should inform other involved supervisors when taking supervisory measures against or imposing sanctions on that insurance legal entity, where those sanctions are material or otherwise relevant to those supervisors.

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**CF 10.0.a** The group-wide supervisor applies supervisory measures directly to the Head of the IAIG. If the Head of the IAIG is not within the group-wide supervisor’s jurisdiction, other involved supervisors apply supervisory measures to assist the group-wide supervisor.

- **CF 10.0.a.1** The group-wide supervisor should have flexibility in how it applies supervisory measures, which may need to vary according to the legal structure of the group, the jurisdiction in which the legal entities in the group are established, and the supervisory authority over relevant parts of the group.

- **CF 10.0.a.2** If the Head of the IAIG is not located in the jurisdiction of the group-wide supervisor, the group-wide supervisor should use indirect powers to apply supervisory measures.

- **CF 10.0.a.3** Other involved supervisors should assist the group-wide supervisor to apply supervisory measures to the Head of the IAIG or to insurance legal entities if they have direct supervisory powers to do so.

**CF 10.0.b** An involved supervisor coordinates with other involved supervisors before requiring a specific preventive or corrective measure if that measure will have a material effect on the supervision of the IAIG as a whole, or on the supervision of an insurance legal entity within the IAIG, unless exceptional circumstances preclude such coordination.

- **CF 10.0.b.1** The supervisory college provides a forum for the group-wide supervisor and other involved supervisors to coordinate preventive and corrective measures. In addition to supervisory colleges,
coordination can take place through a crisis management group (see ComFrame material under ICP 25 Supervisory Coordination and Cooperation).

CF 10.0.b.2 Supervisory measures that should be preceded by coordination between involved supervisors include: restricting the transfer of assets between entities within the IAIG; requiring an increase in capital; and suspending or revoking the licence of an insurance legal entity.

CF 10.0.b.3 There may be exceptional circumstances where an involved supervisor that wishes to act cannot coordinate in advance with the other involved supervisors. In such circumstances, the involved supervisor should inform the other involved supervisors of the decision made, or action taken, and the supporting rationale, as soon as possible.

CF 10.0.b.4 An involved supervisor does not need to coordinate with the other involved supervisors if the preventive or corrective measure will not materially affect the IAIG as a whole or another insurance legal entity. For example, an involved supervisor may not need to coordinate with the other involved supervisors before requiring the insurance legal entity to enhance its regulatory reporting as a preventive measure to monitor the legal entity’s specific business.

CF 10.0.b.5 If an involved supervisor requires an insurance legal entity within the IAIG to take preventive or corrective measures that are long-term and material in nature, that supervisor should provide periodic updates to the supervisory college.

CF 10.0.b.6 The requirement to coordinate action (other than in exceptional circumstances) does not imply that the supervisor taking action needs the consent of other involved supervisors to take action which is necessary to discharge its duties under the law in its jurisdiction.

10.1 The supervisor acts against individuals or entities that conduct insurance activities without the necessary licence.

10.1.1 The supervisor should have in place mechanisms to identify when unlicensed insurance activity is being carried out. Examples of such mechanisms include monitoring of media and advertising, review of consumer complaints or encouraging industry and other stakeholders to notify the supervisor of suspicious activity.

10.1.2 Where unlicensed activity is identified, the supervisor should act to address the issue. Examples include requiring the unlicensed entity to apply for a licence, seeking court orders to require the unlicensed entity to stop the activity, informing law enforcement authorities of criminal and/or civil concerns, imposing sanctions on the individual/entity or publicising the fact that the individual and/or entity is/are not licensed to conduct insurance activities.

10.2 The supervisor requires preventive measures if the insurer seems likely to operate in a manner that is inconsistent with regulatory requirements.

10.2.1 Determining when an insurer seems likely to operate in a manner that is inconsistent with regulatory requirements will require a degree of discretion on the part of the supervisor. Nevertheless, concerns that
necessitate preventive measures should be well founded based on the supervisor’s assessment.

10.2.2 If the insurer operates in a manner that is likely to impact its ability to protect policyholders’ interests or pose a threat to financial stability, the supervisor should act more urgently in requiring preventive measures.

10.2.3 The supervisor should communicate concerns to the insurer with a promptness that reflects the significance of the concern. Some concerns, such as relating to insurer solvency, policyholder protection, or financial stability, will be sufficiently significant to require immediate communication to the insurer. Other concerns, although significant, may not require such rapid communication, but should still be communicated appropriately. For example, it is unlikely to be appropriate for a supervisor to wait for the next on-site visit to an insurer before communicating a significant concern.

10.2.4 The supervisor should promptly bring significant concerns to the attention of the Board because it has ultimate responsibility for the insurer and that such concerns are resolved. In addition, the supervisor should also communicate with Senior Management and with Key Persons in Control Functions to bring significant concerns to their attention.

10.2.5 The supervisor should have available a range of preventive measures broad enough to address insurers of all sizes and complexities. Preventive measures should be chosen to address the severity of the insurer’s problems.

10.2.6 The supervisor should have the power to issue, and enforce:

- restrictions on business activities, such as:
  - prohibiting the insurer from issuing new policies or new types of product;
  - requiring the insurer to alter its sales practices or other business practices;
  - withholding approval for new business activities or acquisitions;
  - restricting the transfer of assets;
  - prohibiting the insurer from continuing a business relationship with an intermediary or other outsourced provider, or requiring the terms of such a relationship to be varied;
  - restricting the ownership of subsidiaries; and
  - restricting activities of a subsidiary where, in its opinion, such activities jeopardise the financial situation of the insurer;

  - directions to reinforce the insurer’s financial position, such as:
    - requiring measures that reduce or mitigate risks (for example, restricting exposures, through either hard or soft limits, to individual counterparties, sectors, or asset classes);
• requiring an increase in capital;
• restricting or suspending dividend or other payments to shareholders; and
• restricting purchase of the insurer’s own shares; and

• other directions, including:
  • requiring the reinforcement of governance arrangements, internal controls or the risk management system;
  • requiring the insurer to prepare a report describing actions it intends to undertake to address specific activities the supervisor has identified, through macroprudential surveillance, as potentially posing a threat to financial stability (see ICP 24 Macroprudential Supervision);
  • facilitating the transfer of obligations under the policies from a failing insurer to another insurer that accepts this transfer;
  • suspending the licence of an insurer; and
  • baring individuals acting in key roles from such roles in future.

10.2.7 The supervisor may also have other powers available, including:

• temporarily delaying or suspending, in whole or in part, the payments of the redemption values on insurance liabilities or payments of advances on contracts;
• lowering the maximum rate of guarantees for new business or introducing additional reserving requirements; or
• incentivising the use of a system-wide lending facility, when available, for market-wide liquidity issues extending to insurers.

10.2.8 The supervisor should take steps to address problems arising from Board Members, Senior Management, Key Persons in Control Functions, significant owners, external auditors and any other person who plays a significant role within the insurer. For example, the supervisor should require the insurer to replace or restrict the power and role of those involved (listed above) in the governance processes if the supervisor has material concerns with management or governance.

10.2.9 The supervisor should reject, rescind and/or request a court to revoke the appointment of an external auditor who is deemed to have inadequate expertise or independence, or is not subject to, or does not adhere to, established professional standards.

10.2.10 Supervisors should take action to address insurer audit quality concerns, including, where possible, requiring replacement or appointment of a supplementary auditor and the sanctioning of an external auditor if necessary. Supervisors should watch for indicators of potential major audit quality concerns, such as when:

• the auditor does not have adequate insurance industry knowledge and competence;
• there is an identified issue with auditor objectivity and independence;
• the auditor does not disclose to the supervisor matters that it is required to disclose;
• clear audit quality concerns are identified, such as if the auditor fails to test internal control systems sufficiently, the auditor is not appropriately sceptical, or does not appropriately challenge the insurer's management regarding the major accounting figures; or
• the auditor’s system of internal quality control appears ineffective.

<table>
<thead>
<tr>
<th>CF 10.2.a</th>
<th>The group-wide supervisor requires the Head of the IAIG to take preventive measures if:</th>
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<td>• a legal entity within the IAIG seems likely to operate in a manner that would have a material adverse effect on the IAIG as a whole; or</td>
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<tr>
<td>• the IAIG as a whole seems likely to operate in a manner that is inconsistent with regulatory requirements.</td>
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| CF 10.2.a.1 | The situation described in the first part of the Standard could arise, for example, where one regulated legal entity in the group seems likely to fail to meet its capital requirement, causing the IAIG as a whole to be likely to fail to meet a group capital requirement to which it is subject. |
| CF 10.2.a.2 | The group-wide supervisor should not require the Head of the IAIG to take additional preventive measures if the supervisor of an insurance legal entity within the IAIG has already required that entity to take preventive measures and the group-wide supervisor has assessed that the preventive measures adequately mitigate the risk to the IAIG as a whole. |
| CF 10.2.a.3 | The situation described in the second part of the Standard could arise, for example, where every regulated legal entity in the IAIG meets its capital requirement, but the group as a whole seems unlikely to meet a group capital requirement to which it is subject. |

10.3 The supervisor requires corrective measures if the insurer fails to operate in a manner that is consistent with regulatory requirements.

10.3.1 The Guidance under Standard 10.2 is equally applicable when considering corrective measures.

10.3.2 In addition to the supervisory tools set out in 10.2.6, when considering corrective measures the supervisor may find it necessary, in cases of serious breach of regulatory requirements, to revoke the licence of an insurer. The supervisor should be able to enforce this decision.

10.4 The supervisor:
• requires the insurer to take actions that address the supervisor's identified concerns;
• periodically checks that the insurer is taking action; and
• assesses the effectiveness of the insurer’s actions.

10.4.1 The supervisor should require the insurer to prepare a plan to resolve the concerns within an acceptable timeframe. The plan should include actions proposed by the insurer or preventive or corrective measures required by the supervisor. What is acceptable as a timeframe will depend on the circumstances of the concerns raised.

10.4.2 If the insurer does not prepare an acceptable plan in a specified timeframe to respond to the supervisor’s concerns, the supervisor should impose such a plan on the insurer.

10.4.3 The supervisor should review the results of the actions that the insurer has taken. The supervisor should review both whether the actions have been taken and, if so, the effectiveness of the actions.

10.4.4 The supervisor may require assurance from an independent reviewer regarding adequate resolution of significant concerns. In such cases the supervisor may also require that such an independent reviewer be appointed at the expense of the insurer.

10.5 The supervisor escalates, including enforcing, preventive or corrective measures if its concerns are not addressed by the insurer’s actions.

10.5.1 The supervisor should require further measures if its concerns with the insurer become worse, including if the insurer fails to take the actions in a plan.

10.5.2 Supervisory measures should escalate in line with the supervisor’s concerns about the insurer. If the insurer’s inaction leads to an increased risk to policyholders, then the supervisor should respond by requiring stronger measures to mitigate this risk.

10.5.3 Enforcement of preventive or corrective measures could involve the supervisor issuing a formal direction to an insurer to take particular actions or to cease conducting particular activities. It could also involve the supervisor seeking the assistance of other authorities, or the courts, to enforce a measure.

10.6 The supervisor imposes sanctions on insurers and individuals proportionate to the breach of regulatory requirements or other misconduct.

10.6.1 The supervisor should be able to impose a range of sanctions, which could be administrative, civil or criminal in nature. These can include the
ability to impose fines, the ability to bar individuals acting in key roles from holding similar roles in future, and the ability to require remediation (such as requiring compensation of policyholders in cases of mis-selling). It is recognised that supervisors will not always be able to take a full range of legally binding actions themselves and may need to act in conjunction with, or refer matters to, other authorities, in particular, in the case of criminal penalties.

10.6.2 In some cases it may be appropriate to apply sanctions against insurers or individuals when justified by their actions, or inactions.

10.6.3 The supervisor should, in particular, be able to impose sanctions against insurers and individuals who:

- fail to provide information to the supervisor in a timely fashion;
- withhold information from the supervisor;
- provide information that is intended to mislead the supervisor;
- deliberately misreport to the supervisor; or
- do not act in accordance with orders or directions imposed on the insurer.

10.6.4 The sanctions imposed by the supervisor should be commensurate with the nature and severity of the insurer’s non-compliance with regulatory requirements. Administrative or procedural breaches will generally attract less severe sanctions than breaches arising from an insurer’s intentional disregard of regulatory requirements. The sanction imposed should be sufficiently dissuasive so that the insurer, or other insurers, do not commit a similar breach in the future.

10.6.5 The supervisor should impose more severe sanctions relative to the gravity of the breach where an insurer’s history demonstrates a pattern of non-compliance with regulatory requirements.

10.6.6 The supervisor may impose sanctions on insurers or individuals in addition to supervisory measures or in the absence of supervisory measures.

10.6.7 The imposition of sanctions against an insurer or an individual typically should not delay either supervisory measures or insurer action taken in response to supervisory measures. However, in some instances, the nature of the sanctions may delay supervisory measures. For example, where a supervisor sanctions an insurer by requiring a number of Senior Managers to be replaced with new individuals, supervisory measures intended to improve the governance of the insurer may not be practical until after the new individuals are appointed.

10.6.8 The supervisor, or another responsible authority in the jurisdiction, should take action to enforce sanctions that have been imposed.

10.6.9 The supervisor should sanction insurers and individuals within a consistent framework, so that similar violations and weaknesses attract similar sanctions. Supervisors should consider how proposed sanctions relate to previous cases. The supervisor should identify precedents where the supervisor has sanctioned an insurer or individual for similar actions/inactions. Where the supervisor has sanctioned an insurer or
individual for similar actions/inactions, then the supervisor should consider carefully whether a comparable sanction is appropriate. If the supervisor concludes that a very different sanction is appropriate, the supervisor should be prepared to explain why it reached this conclusion.

10.6.10 In order for sanctions to have a deterrent effect on other insurers, the fact of the sanction, and sufficient details of the breach, should in general be published. However, the supervisor should retain the discretion to take a different course of action (for example, not to publish, or to delay publication) where this would further the achievement of supervisory objectives or it is otherwise in the public interest to do so.

<table>
<thead>
<tr>
<th>CF 10.6.a</th>
<th>The group-wide supervisor imposes sanctions directly on the Head of the IAIG within the group-wide supervisor’s jurisdiction.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CF 10.6.a.1</td>
<td>Available sanctions should include the imposition of fines and penalties (even if non-compliance by the Head of the IAIG is due to the actions of a legal entity within the IAIG).</td>
</tr>
<tr>
<td>CF 10.6.a.2</td>
<td>The group-wide supervisor should have flexibility in how it imposes sanctions, which may need to vary according to the legal structure of the group, the jurisdiction in which the legal entities in the group are established, and the supervisory authority over relevant parts of the group.</td>
</tr>
<tr>
<td>CF 10.6.a.3</td>
<td>If the Head of the IAIG is not located in the jurisdiction of the group-wide supervisor, the group-wide supervisor should use indirect powers to impose sanctions.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CF 10.6.b</th>
<th>An involved supervisor communicates with other involved supervisors before imposing sanctions on:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• an insurance legal entity;</td>
<td></td>
</tr>
<tr>
<td>• the Head of the IAIG; or</td>
<td></td>
</tr>
<tr>
<td>• an individual involved with the relevant insurance legal entity or the Head of the IAIG</td>
<td></td>
</tr>
</tbody>
</table>

if the sanction will have a material effect on the supervision of the IAIG as a whole or a material effect on the supervision of another insurance legal entity within the IAIG, unless exceptional circumstances preclude such communication.

| CF 10.6.b.1 | The involved supervisor should communicate the need for sanctions to other involved supervisors at the earliest opportunity. Where an involved supervisor must act before communicating the need for sanctions, that supervisor should inform the group-wide supervisor and other involved supervisors of the sanction, and the supporting rationale, as soon as possible. |
ICP 11
There is no longer an ICP 11
ICP 12  Exit from the Market and Resolution

Legislation provides requirements for:
- the voluntary exit of insurers from the market; and
- the resolution of insurers that are no longer viable or are likely to be no longer viable, and have no reasonable prospect of returning to viability.

Introductory Guidance

12.0.1 An orderly process for an insurer’s withdrawal from the business of insurance helps to protect policyholders, and contributes to the stability of the insurance market and the financial system. Jurisdictions should have transparent and effective regimes for an insurer’s exit from the market and the resolution of an insurer.

12.0.2 In this ICP, “resolution” refers to an action taken by a resolution authority towards an insurer that is no longer viable, or is likely to be no longer viable, and has no reasonable prospect of returning to viability. Resolution actions include portfolio transfer, run-off, restructuring, and liquidation.

12.0.3 In this ICP, the term “resolution authority” refers to authorities that are responsible for exercising resolution powers over insurers. Depending on the jurisdiction, this term may include supervisors, other governmental entities or private persons (including administrators, receivers, trustees, conservators, liquidators, or other officers), or courts authorised by law to exercise resolution powers. Thus in this ICP:
- “supervisor” is used when the standard and/or guidance involves responsibilities and/or roles of the day-to-day supervisor of the insurer;
- “resolution authority” is used when the standard and/or guidance involves resolution powers and/or processes after resolution has been instituted: this includes supervisors acting under their resolution powers; and
- “supervisor and/or resolution authority” is used when the standard and/or guidance involves responsibilities for planning and/or initiation of resolution and encompasses supervisors acting in their pre-resolution roles (eg before a supervisor or resolution authority institutes resolution and/or obtains any necessary administrative and/or judicial approvals to do so).

12.0.4 The structure and roles of resolution authorities vary across jurisdictions. In some jurisdictions, the resolution authority and the supervisor may be one single authority; in other jurisdictions, resolution of insurers may be the responsibility of one or more separate authorities. In some jurisdictions certain resolution powers may be exercised or overseen by the court. Whatever the allocation of responsibilities, a transparent and effective resolution regime should clearly delineate the responsibilities
and powers of each authority involved in the resolution of insurers (see ICP 1 Objectives, Powers and Responsibilities of the Supervisor). Where there are multiple authorities responsible for the resolution of insurers, the resolution regime should empower the relevant authorities to cooperate and coordinate with each other.

12.0.5 Exit from the market refers to cessation of the insurer’s business, in part or in whole. Insurers that meet regulatory requirements may decide to exit from the market on a voluntary basis for business and/or strategic reasons. This is often referred to as ‘voluntary exit from the market’.

12.0.6 Insurers may also be required by the supervisor to exit from the market. For example, supervisory measures and/or sanctions may result in an insurer exiting from the market (ie involuntary exit from the market) (see ICP 10 Preventive Measures, Corrective Measures and Sanctions).

12.0.7 Jurisdictions may need to have mechanisms in place to determine whether the continuity of insurance cover is necessary when insurers exit from the market. Any such continuity should preferably be on the same contract terms, but when necessary, on amended terms. Such mechanisms need to be proportionate to the unique nature and structure of the insurance market in each jurisdiction. Continuity of insurance cover may be facilitated by transferring insurance portfolios to a succeeding insurer, including a bridge institution. Continuity of some insurance contracts, particularly for some non-life products, may be necessary for only a short period (for example 30 or 60 days) so that the policyholder has sufficient time to find another insurer. Facilitating continuity of insurance cover might not be necessary for certain types of insurance products, such as those that are offered by many insurers in a market and which are highly substitutable.

12.0.8 Where an insurer exits from the market and there is no succeeding insurer or no similar insurance products available in the market, mechanisms that facilitate the availability of alternate cover may need to be explored by the supervisor, such as when the exiting insurer delivers insurance contracts that cover risks that may be important to a particular jurisdiction’s economy and/or are compulsory insurance in legislation.

12.0.9 Insurers that are no longer viable or likely to be no longer viable and have no reasonable prospect of becoming so through their recovery action or supervisory measures, should be resolved. Figure 12.1 illustrates in a stylised way the relationship between solvency, viability and the nature of actions to be taken. No uniform, single fixed point of non-viability can be defined that will be appropriate for the application of resolution measures in all circumstances. Whether to apply resolution measures, and the type of measures implemented, will depend upon the factual circumstances of the particular resolution scenario.

Figure 12.1. Stylised relationship between solvency, viability and actions to be taken
12.0.10 A resolution regime should make it possible for any losses to be absorbed by: i) shareholders; ii) general creditors; and iii) policyholders, in a manner that respects the jurisdiction’s liquidation claims hierarchy. Policyholders should absorb losses only after all lower ranking creditors have absorbed losses to the full extent of their claims. Mechanisms, such as policyholder protection schemes (PPSs), may mitigate the need for the absorption of losses by policyholders.

12.0.11 Depending on the circumstances, appropriate resolution measures may be applied to one or more separate entities in an insurance group, such as: i) the head of the insurance group; ii) an intermediate holding company below the head of the insurance group; iii) an insurance legal entity within the group; iv) a branch of an insurance legal entity within the group; or v) other regulated (eg banks) or non-regulated entities within the group. For other regulated entities within the group (eg banks), a resolution regime relevant to their sector may apply.

12.0.12 Some insurers operate on a cross-border basis through subsidiaries or branches in another jurisdiction, or through providing insurance services on a cross-border basis without setting up a physical presence outside their home jurisdiction. Also, where an insurance legal entity is a member of a group, there could be intra-group transactions and guarantees among insurance legal entities and/or other group entities in different jurisdictions. Cross-border coordination and cooperation, including exchange of information, is necessary for the orderly and effective resolution of insurers that operate on a cross-border basis.

**Voluntary exit from the market**

12.1 Legislation provides a framework for voluntary exit from the market that protects the interests of policyholders.

12.1.1 Voluntary exit from the market is initiated by the insurer.

12.1.2 The supervisor should require the insurer which voluntarily exits from the market to make appropriate arrangements for the voluntary exit (eg, run-off or portfolio transfer), including ensuring adequate human and financial resources to fulfil all its insurance obligations.

12.1.3 The supervisor should require the insurer which voluntarily exits from the market through run-off to submit a run-off programme to the supervisor. The programme should include at least the following information:
expected timeframe;
projected financial statements;
human and material resources that will be available;
governance and risk management of the process;
communication with policyholders about the insurer’s exit from the market; and
communication to the public.

12.1.4 Insurers that exit from the market on a voluntary basis should continue to be subject to supervision until all insurance obligations are either discharged or transferred to succeeding insurers. Legislation should provide for appropriate requirements for these exiting insurers.

Objectives of the resolution of insurers

12.2 Legislation provides a framework for resolving insurers which:

- protects policyholders; and
- provides for the absorption of losses in a manner that respects the liquidation claims hierarchy.

12.2.1 The legislation should support the objective of protecting policyholders. This however does not mean that policyholders will be fully protected under all circumstances and does not exclude the possibility that losses be absorbed by policyholders, to the extent they are not covered by PPSs or other mechanisms. A jurisdiction may have additional resolution objectives in the legislation, such as contributing to financial stability.

12.2.2 The legislation should provide a scheme for prioritising the payment of claims of policyholders and other creditors in liquidation (liquidation claims hierarchy). Resolution powers should be exercised in a way that respects the hierarchy of creditors’ claims in liquidation. In a resolution action other than a liquidation, creditors should be entitled to compensation if they receive less than they would have received if the insurer was liquidated (ie the “no creditor worse off than in liquidation” (NCWOL) principle). The NCWOL principle may require funding to provide compensation to creditors so that they receive at least as much as they would have received in a liquidation.

12.2.3 Resolution should seek to minimise reliance on public funding. In principle, any public funding used for the resolution of the insurer should be recouped from the insurance sector in a transparent manner. The phrase “reliance on public funding” does not refer to the use of funds from policyholder protection schemes to support the implementation of resolution actions.

CF 12.2.a.1 In addition to the resolution objectives in Standard 12.2, the framework for resolving IAIGs should also include as an objective the contribution to financial stability, where applicable. A jurisdiction may, at its discretion, choose to rank these resolution objectives with respect to IAIGs.
Planning

12.3 The supervisor and/or the resolution authority requires, as necessary, insurers to evaluate prospectively their specific operations and risks in possible resolution scenarios and to put in place procedures for use during a resolution.

12.3.1 The supervisor may identify risks, specific to an insurer’s circumstances, that would arise in resolution and which may impact achieving the resolution objectives of the jurisdiction. For example, such risks may relate to the insurer’s provision of relevant information to the supervisor or resolution authority, the continuity of certain business operations, and/or the orderly implementation of a jurisdiction’s PPS.

12.3.2 The supervisor should require the insurer to consider such risks and where appropriate, prepare contingency plans to mitigate the risk.

12.3.3 The supervisor should require that the insurer have procedures in place to provide necessary information (e.g., policyholders’ names, types of their contracts, and the value of each contract) to a relevant organisation (such as a PPS) in a timely manner when the insurer enters into resolution.

CF 12.3.a Resolution plans are in place for IAIGs where the group-wide supervisor and/or resolution authority, in consultation with the crisis management group of the IAIG (IAIG CMG), deems necessary.

CF 12.3.a.1 The group-wide supervisor and/or resolution authority should decide, in consultation with members of the IAIG CMG (see ComFrame material under ICP 25), whether a resolution plan is needed for an IAIG, considering at least the following:

- the IAIG’s activities and its lines of business;
- the number of jurisdictions where the IAIG operates;
- the complexity of the IAIG’s group structure; and
- the potential impact of failure of the IAIG on the financial system and real economy in the jurisdictions in which the IAIG operates.

Other issues that may also be taken into consideration are, for example:

- the IAIG’s risk management mechanisms; and
- expected costs, benefits and outcomes of the resolution planning requirement.

CF 12.3.a.2 The group-wide supervisor and/or resolution authority should lead the development of the group-wide resolution plan, in coordination with members of the IAIG CMG, and involve the IAIG as appropriate. To facilitate its implementation, the resolution plan should identify, in particular:
- financial and economic functions that need to be continued to achieve the resolution objectives for the IAIG;
- suitable resolution options to preserve such functions or wind them down in an orderly manner;
- data requirements for the IAIG’s business operations, structures and financial and economic functions;
- potential barriers to effective resolution and actions to mitigate those barriers; and
- actions to protect policyholders.

**CF 12.3.a.3** Other involved supervisors and/or resolution authorities may deem it appropriate to have their own resolution plan for the IAIG’s insurance legal entity in their jurisdictions when, for instance:

- the insurance legal entity’s presence in the jurisdiction is large in scope and/or scale;
- the insurance legal entity provides critical and/or non-substitutable insurance coverages; and/or
- its resolution may impact that jurisdiction’s financial system and real economy.

Host jurisdiction resolution plans should be established in cooperation with the group-wide supervisor and/or resolution authority to ensure that the plan is as consistent as possible with the group-wide resolution plan for the IAIG.

**CF 12.3.a.4** Resolution plans should be reviewed on a regular basis, or when there are material changes to the IAIG’s business or structure or any other change that could have a material impact on the resolution plan, and be updated when necessary. These plans should also be subject to regular reviews within the IAIG CMG.

**CF 12.3.b** Where a resolution plan is required, the group-wide supervisor and/or resolution authority, in coordination with the IAIG CMG:

- requires relevant legal entities within the IAIG to submit necessary information for the development of resolution plan;
- regularly undertakes resolvability assessments to evaluate the feasibility and credibility of resolution strategies, in light of the possible impact of the IAIG’s failure on policyholders and the financial system and real economy in the jurisdictions in which the IAIG operates; and
- requires the IAIG to take prospective actions to improve its resolvability.

**CF 12.3.b.1** Resolvability assessments should be conducted at the level of those entities where it is expected that resolution actions would be taken, in accordance with the resolution strategies for the IAIG, as set out in the resolution plan.

**CF 12.3.b.2** Resolvability assessments should consider if it is feasible and credible for the resolution authority to resolve the IAIG in a way that protects...
policyholders and contributes to financial stability while minimising reliance on public funds.

CF 12.3.b.3 Resolvability assessments should be undertaken on a regular basis, or when there are material changes to the IAIG’s business or structure, or any other change that could have a material impact on the resolvability assessment. These assessments should also be subject to regular reviews within the IAIG CMG.

CF 12.3.b.4 When the resolution plan and/or resolvability assessment identifies potential barriers to effective resolution, the IAIG may be given the opportunity to propose its own prospective actions to improve its resolvability by mitigating these barriers.

CF 12.3.c The group-wide supervisor and/or resolution authority, in coordination with the IAIG CMG, requires the Head of the IAIG to have and maintain group-wide management information systems (MIS) that are able to produce information on a timely basis, for supervisors and/or resolution authorities, for the purposes of resolution planning and actions.

CF 12.3.c.1 Information should be available at the Head of the IAIG and the legal entity level.

CF 12.3.c.2 The IAIG may rely on its existing information system, so long as it fulfils the objectives of producing information on a timely basis for the purposes of resolution planning and actions.

CF 12.3.c.3 The IAIG should:

- maintain a detailed inventory, including a description and location, of the key MIS used in material legal entities of the IAIG, mapped to core services and critical functions;
- identify and take steps to address legal constraints on the exchange of management information among material entities of the IAIG (for example, as regards the information flow from individual entities of the group to/from the Head of the IAIG);
- demonstrate, as part of the resolution planning process, that it is able to produce the essential information needed to implement plans within an appropriate period of time; and
- maintain specific information at a legal entity level, including, for example, information on intra-group guarantees booked on a back-to-back basis, or information on the assets supporting policyholder liabilities.

Cooperation and coordination

12.4 The roles and responsibilities of relevant authorities within a jurisdiction that are involved in exit of insurers from the market or their resolution are clearly defined.

12.4.1 The jurisdiction should have a designated authority or authorities empowered to exercise powers for the resolution of an insurer. Where
there are multiple authorities within a jurisdiction, their respective mandates, roles and responsibilities are clearly defined and coordinated.

12.4.2 Where different authorities within a single jurisdiction are in charge of the resolution of an insurer, a lead authority that coordinates the resolution of the insurer should be identified.

12.4.3 An example where a lead resolution authority should be identified is where the insurer has insurance and other financial operations (such as banking), and the authority responsible for the resolution of the other financial operations is different from the authority responsible for the resolution of the insurance operations in the jurisdiction.

12.4.4 Coordination agreements may be established where multiple authorities may be involved in the resolution of an insurer.

12.5 The supervisor and/or resolution authority shares information, cooperates and coordinates with other relevant authorities for the exit of insurers from the market or their resolution.

12.5.1 Relevant authorities in this context may include the group-wide supervisor and/or resolution authority, other involved supervisors and/or resolution authorities and others that may need to be involved in the resolution of insurers, such as PPS and supervisors in other financial sectors.

12.5.2 When an insurer voluntarily exits from the market, the supervisor should cooperate and coordinate with other relevant supervisors as necessary.

12.5.3 Cooperation and coordination should include matters, among others, such as consulting with or informing other relevant authorities of etc.

12.5.4 When consulting, authorities should seek to determine if coordinated action on the resolution of an insurance group is necessary to avoid or minimise adverse impact on other group entities.

12.5.5 The supervisor and/or resolution authority should seek to achieve a cooperative solution with authorities in other jurisdictions who are concerned with the resolution of the insurance group.

12.5.6 Cooperation and coordination would be crucial when considering resolution action such as ordering the insurer to cease business (for example, when the insurer has overseas branches), freezing the insurer’s assets, and/or removing management of overseas branches, subsidiaries, or holding companies.

12.5.7 Information sharing, cooperation and coordination should be undertaken in a manner that do not compromise the prospect of successful exit or resolution.

12.5.8 Cross-border coordination agreements may need to be established between relevant authorities.

Triggers
12.6 Legislation provides criteria for determining the circumstances in which the supervisor and/or resolution authority initiates resolution of an insurer.

12.6.1 Resolution should be initiated where an insurer is no longer viable, or is likely to be no longer viable and has no reasonable prospect of becoming so, even if the entity is solvent in light of financial reporting standards. Criteria that determine or help determine when the supervisor and/or resolution authority initiates resolution should be considered in light of the insurer and the circumstances of its resolution. Criteria for determining whether resolution processes should be initiated may include:

- the insurance legal entity is in breach of the minimum capital requirement (MCR) and there is no reasonable prospect of restoring compliance with MCR;
- the consolidated own funds of the insurance group are lower than the sum of the proportional shares of the MCRs, or minimum capital requirements of the regulated legal entities belonging to the insurance group (eg due to double-gearing);
- the insurer is in breach of other material prudential requirements (such as a requirement on assets backing technical provisions) and there is no reasonable prospect of compliance being restored;
- there is a strong likelihood that policyholders and/or other creditors will not receive payments as they fall due;
- intra-group transactions impede or are likely to impede the ability of the insurer to meet policyholder and/or creditor obligations as they fall due; or
- measures attempting the recovery of the insurer have failed, or there is a strong likelihood that such proposed measures will: i) not be sufficient to return the insurer to viability; or ii) cannot be implemented in a reasonable timeframe.

Powers

12.7 Legislation provides an appropriate range of powers to resolve insurers effectively. These powers are exercised proportionately and with appropriate flexibility.

12.7.1 Powers to resolve insurers should be exercised in a proportionate manner that resolves the insurer most effectively in light of the circumstances and objectives of resolution. Some powers may not be needed for all insurers but only for insurers that are, for example, of systemic importance in the jurisdiction. Some powers may only affect the insurer, while others may impact contractual rights of third parties (such as a suspension of policyholders' rights or restructuring of policies).

12.7.2 Some resolution powers are exercised with the aim to stabilise or restructure an insurer and avoid liquidation. Liquidation can be used in conjunction with other resolution powers. Creditors should have a right to compensation where they do not receive at a minimum what they would have received in a liquidation of the insurer under the applicable insolvency regime (NCWOL principle).
12.7.3 If a court order is required for the resolution authority to exercise resolution powers, the time required for court proceedings should be taken into consideration for the effective implementation of resolution actions.

12.7.4 Powers to resolve insurers that may be exercised, subject to adequate safeguards, should include the following. This list is not exhaustive and the resolution authority should have discretion to apply other available powers. The order of presentation of the powers is not an indication of the sequence in which these powers could be exercised.

- prohibit the payment of dividends to shareholders;
- prohibit the payment of variable remuneration to, and allow the recovery of monies from, Members of the Board, Senior Management, Key Persons in Control Functions and major risk taking staff, including claw-back of variable remuneration;
- prohibit the transfer of the insurer’s assets without supervisory approval;
- retain, remove or replace the Board, Senior Management and Key Persons in Control Functions;
- take control of and manage the insurer, or appoint an administrator or manager to do so;
- withdraw the license to write new business and put all or part of the insurance business contracts into run-off;
- sell or transfer the shares of the insurer to a third party;
- restructure, limit or write down liabilities (including insurance liabilities), and allocate losses to creditors and policyholders, where applicable and in a manner consistent with the liquidation claims hierarchy and jurisdiction’s legal framework;
- override rights of shareholders of the insurer in resolution, including requirements for approval by shareholders of particular transactions, in order to permit a merger, acquisition, sale of substantial business operations, recapitalisation or other measures to restructure and dispose of the insurer’s business or its liabilities and assets;
- terminate, continue or transfer certain types of contracts, including insurance contracts;
- transfer or sell the whole or part of the assets and liabilities of the insurer to a solvent insurer or third party;
- transfer any reinsurance associated with transferred insurance policies without the consent of the reinsurer;
- temporarily restrict or suspend the policyholders’ rights of withdrawing their insurance contracts;
• stay rights of the reinsurers of the ceding insurer in resolution to terminate or not reinstate coverage relating to periods after the commencement of resolution;
• impose a temporary suspension of payments to unsecured creditors and a stay on creditor actions to attach assets or otherwise collect money or property from the insurer; and
• initiate the liquidation of the whole or part of the insurer.

12.7.5 The choice and application of the powers set out above should take into account whether an insurer’s disorderly failure would potentially cause significant disruption to the financial system and real economy, the types of business the insurer is engaged in, and the nature of its assets and liabilities.

12.7.6 Where the resolution authority takes action which leads to another person taking control of an insurer with a view to restoring, restructuring or running off the business, the resolution authority should continue to be responsible for the orderly resolution of the insurer. In particular, the resolution authority should continue to exercise functions which ensure that the objectives of resolution are met, notwithstanding any additional responsibilities which the person appointed may have to the insurer or to the courts.

12.7.7 Resolution powers should be exercised in a manner that does not discriminate between creditors on the basis of their nationality, the location of their claim, or the jurisdiction where it is payable.

12.7.8 Mechanisms should be in place to (i) enable continuity of cover for policyholders where this is needed and (ii) ensure timely payment of claims to policyholders of the insurer in resolution, with the aim to minimise disruption to the timely provision of benefits to policyholders. A PPS can be one of the mechanisms that can help ensure timely payments to policyholders and minimise disruption.

12.7.9 When requiring contracts to be transferred to another insurer, the resolution authority should satisfy itself that the interests of the policyholders of the transferor and of the transferee are safeguarded. In some cases this may be achieved through varying, reducing or restructuring the transferred liabilities.

12.7.10 Portfolio transfers and transfers of other types of contracts of the insurer in resolution should not require the consent of each policyholder or party to the contract.

12.7.11 Consistent with the liquidation claims hierarchy, insurance liabilities should be written down only after equity and all liabilities that rank lower than insurance liabilities have absorbed losses, and only if the resolution authority is satisfied that policyholders are no worse off than in liquidation after compensation, where necessary.

12.7.12 Information on the period during which policyholders are prohibited from withdrawing from their insurance contracts should be available to policyholders in a transparent manner for the purposes of policyholder protection.
12.7.13 The exercise of stay powers, their scope of application and the duration of the stays should be designed to address the specific situation of the insurer in resolution. For example, the duration of the stay could depend on the type of the insurance or financial contract.

Group and Branch Perspectives

12.7.14 There may be circumstances where resolution powers will need to be exercised at the level of the head of the insurance group and/or non-regulated entities. Resolution authorities should have the capacity to exercise resolution powers directly on such entities within their jurisdiction to the extent necessary and appropriate. Where resolution powers need to be exercised on entities outside of their jurisdiction or legal authority, the resolution authority should cooperate and coordinate with relevant supervisors and resolution authorities in the relevant jurisdictions, to the extent necessary and appropriate.

12.7.15 Unless otherwise specified by the resolution authority, resolution powers exercised on an insurance legal entity (for instance to cease writing business) should also apply to the legal entity’s branches. However, the resolution authority responsible for a branch can also exercise powers toward the branch. In either case, the resolution authorities responsible for the branch and the insurance legal entity should consult and cooperate with one another.

12.7.16 The resolution authority may choose which power, or which combination of powers, is applied to which entity within the group. Different types of powers may be applied to different parts of the entity’s business.

<table>
<thead>
<tr>
<th>CF 12.7.a</th>
<th>The powers that the supervisor and/or resolution authority may exercise, subject to adequate safeguards and proportionality, for the resolution of an IAIG include, at least, the following:</th>
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<tbody>
<tr>
<td></td>
<td>• prohibit the payment of dividends to shareholders;</td>
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<td></td>
<td>• prohibit the payment of variable remuneration to, and allow the recovery of monies from, Members of the Boards,</td>
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<td></td>
<td>Senior Management, Key Persons in Control Functions and major risk taking staff, including claw-back of variable</td>
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<td>remuneration;</td>
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<td></td>
<td>• prohibit the transfer of the IAIG’s assets without supervisory approval;</td>
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<td></td>
<td>• retain, remove or replace the Members of the Boards, Senior Management and/or Key Persons in Control Functions;</td>
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<td></td>
<td>• take control of, and manage, the IAIG, or appoint an administrator or manager to do so;</td>
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<td></td>
<td>• withdraw the licence to write new business and put all or part of the insurance contracts into run-off;</td>
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<td>• sell or transfer the shares of the IAIG to a third party;</td>
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<td></td>
<td>• restructure, limit or write down liabilities (including insurance liabilities), and allocate losses to creditors and</td>
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<td>policyholders, where applicable and in a manner consistent with the</td>
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liquidation claims hierarchy and jurisdiction's legal framework;

- override rights of shareholders of the IAIG in resolution, including requirements for approval by shareholders of particular transactions, in order to permit a merger, acquisition, sale of substantial business operations, recapitalisation, or other measures to restructure and dispose of the IAIG’s business or its liabilities and assets;

- terminate, continue or transfer certain types of contracts, including insurance contracts;

- transfer or sell the whole or part of the assets and liabilities of the IAIG to a solvent insurer or third party;

- transfer any reinsurance associated with transferred insurance policies without the consent of the reinsurer;

- temporarily restrict or suspend the policyholders' rights of withdrawing their insurance contracts;

- stay rights of the reinsurers of the ceding insurer in resolution to terminate, or not reinstate, coverage relating to periods after the commencement of resolution;

- impose a temporary suspension of payments to unsecured creditors and a stay on creditor actions to attach assets or otherwise collect money or property from the IAIG;

- establish a bridge institution;

- take steps to provide continuity of essential services and functions including:
  - requiring other legal entities within the IAIG (including non-regulated entities) to continue to provide these essential services to the entity in resolution, any successor, or an acquiring entity;
  - ensuring that the residual entity in resolution can temporarily provide such services to a successor or an acquiring entity; or
  - procuring necessary services from unaffiliated third parties;

- temporarily stay early termination rights associated with derivatives and securities financing transactions; and

- initiate the liquidation of the whole or part of the IAIG.

CF 12.7.a.1 In some jurisdictions, PPSs can be utilised as a bridge institution to which insurance contracts of the IAIG are transferred.

CF 12.7.a.2 Essential services mentioned under CF12.7a include, in particular, IT.

Liquidation
12.8 Legislation provides that the supervisor is involved in the initiation of the liquidation of an insurance legal entity (or a branch of a foreign insurer in its jurisdiction).

12.8.1 Legislation should define the involvement of the supervisor in a liquidation, which promotes the protection of policyholders. The supervisor should be authorised to initiate, or should be involved in the liquidation of an insurance legal entity, or a branch of a foreign insurer in its jurisdiction.

12.8.2 In many jurisdictions, all resolution actions, including liquidation, may only be initiated by the supervisor and/or resolution authority. However, in some jurisdictions, the liquidation process can be initiated by another person (such as a creditor of the insurance legal entity, the insurance legal entity itself, or the court). If legislation permits another person to initiate liquidation, it should: i) require prior approval of the supervisor, or ii) at a minimum, require prior coordination with the supervisor. If legislation permits another person to initiate liquidation without such prior approval or coordination, it should provide that the supervisor may challenge the person’s action.

12.9 Legislation provides a high legal priority to policyholders’ claims within the liquidation claims hierarchy.

12.9.1 Policyholders should receive high legal priority in the liquidation of an insurance legal entity (or of a branch) so that policyholders rank above ordinary unsecured creditors. However, it is common in many jurisdictions that a higher priority is given to a limited number of other categories of claims. These may include claims:

- by liquidators, such as claims corresponding to expenses arising from the liquidation procedure;
- by employees;
- by tax or fiscal authorities;
- by social security systems; and
- claims on assets subject to rights in rem (e.g., through collateral, lien, mortgage).

12.9.2 In some jurisdictions, policyholders receive higher priority but only on a determined part of the insurance legal entity’s assets (e.g., the assets covering technical provisions). In such jurisdictions, with respect to this portion of the insurer's assets, policyholders’ claims are generally subordinate only to liquidation expenses.

12.9.3 Mechanisms facilitating timely payment and, when needed, continuity of contracts should be in place. In some jurisdictions, a PPS or other protection mechanisms can contribute to a resolution and ensure timely payment of claims to policyholders. Where a bridge institution is available, this can ensure continuity of insurance products in cases where no insurer present in the market takes over the insurance portfolio of the insurance legal entity that would otherwise be liquidated. A PPS or other protection mechanisms could also ensure compliance with NCWOL principle by providing compensation to policyholders so that
none are worse off than in liquidation. In some jurisdictions, a PPS can only pay claims after liquidation has been initiated.

**Safeguards**

12.10 The resolution authority exercises resolution powers in a way that respects the liquidation claims hierarchy and adheres to the NCWOL principle. If the resolution authority departs from the general principle of equal treatment of creditors of the same class (pari passu), the resolution authority substantiates the reasons for such departure to all affected parties.

12.10.1 While respecting the liquidation claims hierarchy, the resolution authority could treat certain types of creditors differently from others in the same class of creditors’ hierarchy. In such cases, the reasons for such a treatment should be transparent and clearly explained. Concerned creditors should be protected by the NCWOL principle and where they do not receive at a minimum what they would have received in a liquidation of the entity they should have a right to compensation.

12.10.2 For instance, different types of creditors could be:

- two categories of policyholders ranking pari passu where one is covered by a PPS while the other is not; or
- two categories of creditors ranking pari passu but the creditors are different in nature (e.g., direct policyholders versus cedants).

12.10.3 For instance, different treatment of a creditor could be:

- settling contracts ranking pari passu at a different pace; or
- reducing (writing down) contracts ranking pari passu at a different rate.

12.10.4 These options could be used provided this does not infringe the NCWOL principle. For instance, Figure 12.2 illustrates the insurance liabilities (ILs) of an insurance legal entity consisting of two portfolios (A and B), where the total assets amount to 120 but the ILs of each portfolio amount to 100. Assuming that these two portfolios rank pari passu, each policyholder would receive 60% of their credit in liquidation. The resolution authority could reduce the ILs of A to 80 and the ILs of B to 70 (for instance, in the event where a sound insurer or sound insurers accepted to fund part of but not the whole shortfall). However, if the resolution authority reduces the ILs of B to 40, the resolution authority will need to provide compensation to policyholders of portfolio B (in the amount of 20) in order to meet the NCWOL principle. This simplified example does not take account of potential PPSs which could pay some claims.
12.10.5 The resolution authority could take actions which could worsen the position of some creditors, provided that said creditors receive compensation sufficient to meet the NCWOL principle. Figure 12.3 illustrates this approach – it would be beneficial to policyholders in portfolio B to have their policies transferred, but the portfolio transfer worsens the position of policyholders in portfolio A. Policyholders in portfolio A therefore should receive appropriate compensation to ensure that they are not worse off compared to a liquidation scenario prior to the portfolio transfer. This example does not take account of potential PPSs which could pay some claims.

12.11 Legislation provides whether insurance liabilities may be restructured and whether policyholders may absorb losses.

12.11.1 In some jurisdictions, insurance liabilities may be restructured. Restructuring, limiting or writing down insurance liabilities may include:

- suspending or postponing payments to policyholders;
• amending terms of insurance contracts;
• terminating or restructuring options provided to policyholders;
• reducing the value of current and future benefits;
• early settling of contracts by payment of a proportion of the insurance liabilities to provide a more rapid and cost-effective resolution. This can apply to future determined benefits but also, and in particular in the case of inward (accepted) reinsurance, to future contingent claims; or
• restructuring reinsurance contracts to allow losses to be imposed on cedants as appropriate.

12.11.2 In most cases, approval from the court is required for the restructuring, while in some jurisdictions the resolution authority is empowered to restructure all or part of insurance liabilities without court approval. Restructuring should only occur if it adheres to the NCWOL principle.

12.11.3 Where insurance liabilities may be subject to restructuring in resolution, the resolution authority should clearly communicate information (for example, the processes through which such restructuring is undertaken and the extent that policyholders may be forced to absorb losses) to interested stakeholders.

Issues specific to groups and branches

12.12 Where the insurance legal entity belongs to a group and the head of the insurance group is located in the same jurisdiction as the legal entity, mechanisms are in place through which the head of the insurance group is able to be resolved.

12.12.1 When an insurance legal entity is resolved, the resolution of, or the application of some resolution powers to, the head of the group may support or aid the orderly resolution of the insurance legal entity and best ensure the protection of policyholders.

CF 12.12.a.1 ICP 12 and the ComFrame material integrated in ICP 12 may be applicable, where appropriate, to the resolution of:
• the Head of the IAIG, and any intermediate holding company within the IAIG;
• non-regulated operational entities within the IAIG that are significant to the business of the group;
• non-insurance financial institutions within the IAIG; and
• branches of insurers within the IAIG.

This guidance is not intended to override any existing sectoral requirement (eg for banks).

CF 12.12.a.2 Resolution actions should be taken for legal entities and branches within the IAIG, that fall within the scope stipulated above, as necessary and appropriate.
12.13 The resolution authority has the authority to resolve a branch of a foreign insurer located in its jurisdiction and, in such circumstance, coordinates and cooperates with the supervisor and/or resolution authority responsible for the insurance legal entity.

12.13.1 The resolution authority responsible for a branch should have the ability to support a resolution carried out by the resolution authority of the insurance legal entity which owns the branch or by the resolution authority responsible for the resolution of the insurance group to which the branch belongs.

12.13.2 The resolution process may differ in the jurisdiction of the branch and in that of the insurance legal entity, due, among other things, to different insolvency laws and creditor hierarchies.

12.13.3 Where the resolution authority of the insurance legal entity which owns the branch or the resolution authority responsible for the resolution of the insurance group to which the branch belongs are not taking action, or are acting in a manner that does not take sufficient account of the objectives of resolution in the branch jurisdiction, the resolution authority responsible for the branch may need to take actions of its own initiative.

12.13.4 Where the resolution authority for a branch takes resolution action of its own initiative, it should give prior notification and consult the supervisor or resolution authority of the insurance legal entity which owns the branch and/or the supervisor or resolution authority of the insurance.
Reinsurance and Other Forms of Risk Transfer

The supervisor requires the insurer to manage effectively its use of reinsurance and other forms of risk transfer. The supervisor takes into account the nature of reinsurance business when supervising reinsurers based in its jurisdiction.

Introductory Guidance

13.0.1 Reinsurance refers to insurance purchased by an insurer (the ceding insurer) to provide protection against certain risks, primarily underwriting risks of the insurance policies issued by the insurer. Reinsurers assume these risks in exchange for a premium. Other forms of risk transfer include alternative reinsurance arrangements, such as risk transfer to the capital markets. For simplicity, this ICP uses “reinsurance” to refer to both mainstream reinsurance and other forms of risk transfer.

13.0.2 Geographical diversification of risk, which typically involves risk transfer across jurisdictional borders, is a key element of ceding insurer’s and reinsurer’s capital and risk management. Geographical diversification can also have an impact in the jurisdiction of the ceding insurer, in particular jurisdictions exposed to catastrophes. By ceding insurance risk across borders, ceding insurers in the jurisdiction, and the jurisdiction as a whole, can benefit from a reduced concentration of insurance risk exposures at the ceding insurer and jurisdiction level respectively. This may also contribute to the financial stability of the jurisdiction.

13.0.3 Ceding insurers and reinsurers may face external limitations to geographical diversification, for example, in the form of constraints to cross-border risk transfer. The supervisor should be aware of and take into account the potential impacts of such limitations on individual ceding insurers and reinsurers as well as on the soundness and efficiency of the insurance market.

13.0.4 A reinsurance contract is one of indemnity between the reinsurer and ceding insurer and does not constitute a legal transfer of part of the underlying risk in the same way as, for example, a novation. Nonetheless, reinsurance contracts have the effect of transferring part of the underlying risk in an economic sense. The supervisor should remain aware that while reinsurance transfers insurance risk from the ceding insurer to the reinsurer, it also creates other risks. In a standard transaction, the ceding insurer reduces its insurance risk and assumes other risks such as credit, operational and basis risk; the reinsurer assumes risks such as insurance, timing, operational and credit risk.

13.0.5 A reinsurance contract is by nature a business-to-business transaction, made between professional counterparties as part of a wider risk and capital management approach. For this reason, the sort of asymmetry of expertise and knowledge associated with insurance contracts involving general consumers is usually not an issue in the reinsurance sector, although some asymmetry of bargaining power can exist, depending on the precise dynamics of the market. Thus, typically, it is not necessary for the supervisor to seek the same level of protection for ceding insurers as it does for general consumers (see ICP 19 Conduct of Business).
13.0.6 The supervisor should be able to assess whether ceding insurers make effective use of reinsurance. This involves gaining an understanding of, and comfort with, at least:

- the ceding insurer’s reinsurance strategy and reinsurance programme;
- the systems of risk management and internal controls put in place in order to implement the reinsurance strategy and execute the reinsurance programme;
- the economic impact of the risk transfer originating from the ceding insurer’s reinsurance programme; and
- the impact of reinsurance on the ceding insurer’s liquidity management.

13.0.7 The standards and guidance under this ICP are applicable to insurers and reinsurers, thus throughout this ICP:

- references to ceded reinsurance should be taken to include ceded retrocession (ie the reinsurance ceded by reinsurers);
- references to ceding insurers should be taken to include ceding reinsurers (ie retrocedents); and
- references to reinsurers should be taken to include retrocessionaires (ie reinsurers that assume reinsurance from ceding reinsurers).

13.1 The supervisor requires ceding insurers to have a reinsurance programme that is appropriate to their business and part of their overall risk and capital management strategies.

13.1.1 A ceding insurer’s risk and capital management strategies should clearly articulate the part played by reinsurance, in particular:

- the objectives that are pursued by using reinsurance;
- the risk concentration levels and ceding limits as defined by the ceding insurer’s risk appetite; and
- the mechanisms to manage and control reinsurance risks.

13.1.2 When articulating the part played by reinsurance in the overall risk and capital management strategies, the ceding insurer should take into account its business objectives, levels of capital and business mix, with particular reference to:

- risk appetite (both gross limit and net retention);
- peak exposures and seasonality in the insurance book;
- levels of diversification in the insurance book; and
- appetite for credit risk posed by reinsurers.

13.1.3 The reinsurance programme comprises the detailed implementation of the reinsurance related elements of the risk and capital management strategies in terms of coverage, limits, deductibles, layers, signed lines and markets used. It should reflect the ceding insurer’s overall risk
appetite, comparative costs of capital and liquidity positions determined in the reinsurance strategy. Therefore, reinsurance programmes can vary significantly in complexity, levels of exposure and number of participants.

13.1.4 In some instances, an insurer may have a business strategy and risk appetite to retain all risk and therefore a reinsurance programme would not be necessary.

13.1.5 Senior Management develops the reinsurance related elements of the risk management strategy as well as the reinsurance programme. Senior Management is also responsible for establishing appropriate systems and controls to ensure that these are complied with. The Board is responsible for approving the strategy and ensuring an appropriate oversight and consistent implementation of the reinsurance programme.

13.1.6 Senior Management of the ceding insurer should regularly review the performance of its reinsurance programme, to ensure that it functions as intended and continues to meet its strategic objectives. It is likely that such a review would take place as part of the feedback loop that is part of the risk management framework.

13.1.7 The supervisor should understand the ceding insurer’s business objectives and strategies, how reinsurance fits into these, and assess the extent to which objectives and strategies are adequately reflected in the reinsurance programme. The supervisor should challenge the ceding insurer where it identifies inconsistencies between the objectives and strategies and the reinsurance programme.

13.1.8 The supervisor’s assessment of a ceding insurer’s reinsurance programme should be based on a number of factors, such as the:

- structure of the programme, including any alternative risk transfer mechanisms;
- proportion of business ceded so that the net risks retained are commensurate with the ceding insurer’s financial resources and risk appetite;
- financial condition and claims payment record of the reinsurers in question (both in normal and stressed conditions);
- levels of exposure to a single reinsurer or different reinsurers being part of the same group;
- extent of any credit risk mitigation in place;
- expected resilience of the reinsurance programme in stressed claims situations, including stress related to the occurrence of multiple and/or catastrophic events;
- cession limits, if any, applicable in the jurisdiction;
- the supervisory regime in place in the jurisdiction of the reinsurer;
- level of effective risk transfer; and
Group perspectives

13.1.9 The group-wide supervisor should require a reinsurance strategy for the insurance group that includes the following issues:

- its interaction with the group-wide risk and capital management strategies;
- how the risk appetite is achieved, on both a gross limit and net retention basis;
- the appetite for reinsurer credit risk, including approved security criteria for reinsurance transactions and aggregate exposure criteria to individual or related reinsurers;
- the autonomy afforded to individual insurance legal entities to enter into “entity specific” reinsurance arrangements, and the management and the aggregation of these exposures in the group-wide context;
- procedures for managing reinsurance recoverables, including required reporting from insurers;
- intra-group reinsurance strategy and practice; and
- use of alternative risk transfer, including capital markets risk transfer products.

13.2 The supervisor requires ceding insurers to establish effective internal controls over the implementation of their reinsurance programme.

13.2.1 Control of the reinsurance programme should be part of the ceding insurer’s overall system of risk management and internal controls (see ICP 8 Risk Management and Internal Controls). The supervisor should require that the controls and oversight in place are suitable in the context of the ceding insurer’s business.

13.2.2 The ceding insurer should ensure that the characteristics of its reinsurance programme, including the credit risk posed by the reinsurer, are reflected in its capital adequacy assessment as well as its ORSA (see ICP 16 Enterprise Risk Management for Solvency Purposes).

Credit risk posed by the reinsurer

13.2.3 When developing the reinsurance programme the ceding insurer should consider its appetite for reinsurer credit risk. Reinsurers may face solvency issues, leading to delayed payment or default, and this can have significant consequences for the solvency and liquidity of the ceding insurer.

13.2.4 In practice, ceding insurers have various options to mitigate reinsurer credit risk, for example:

- establishing criteria on the financial condition and claims payment record of eligible reinsurers;
• setting limits on risks ceded to a single reinsurer;
• ensuring a spread of risk amongst a number of reinsurers;
• incorporating rating downgrade or other special termination clauses into the reinsurance contract;
• requiring the reinsurer to post collateral (the ability to require this may depend upon the relative commercial strengths of the ceding insurer and reinsurer);
• proactively monitoring reinsurance claims recoveries; and
• withholding reinsurer’s funds.

Approved security criteria

13.2.5 The ceding insurer should have in place procedures for identifying reinsurers that meet its security requirements. If a ceding insurer develops a pre-approved list of reinsurers, there should also be processes for dealing with situations where there is a need to assess reinsurers outside any pre-approved list. Ceding insurers may have their own credit committees to make their own assessment of the risk.

13.2.6 In line with other approaches to identifying appropriate reinsurers, any approved security criteria should be derived from a high level statement of what reinsurance security will be acceptable to the ceding insurer, which may be based on:

• external opinions;
• the ceding insurer’s own view of the reinsurer;
• minimum levels of capital;
• duration and quality of relationship;
• expertise of the reinsurer;
• levels of retrocession;
• reinsurance brokers’ security criteria; or
• a mixture of these and other factors.

Aggregate exposure limits or guidelines

13.2.7 A ceding insurer should set prudent limits or guidelines reflecting security and size of the reinsurer, in relation to its maximum aggregate exposure to any one reinsurer or to a group of related reinsurers, which would be complementary to any supervisory limits or guidelines.

13.2.8 The ceding insurer should have in place procedures for monitoring this aggregate exposure to ensure that these limits or guidelines are not breached. The ceding insurer should also have procedures to manage excess concentrations going forward, such as bringing them back within limits or guidelines.

Matching of underlying underwriting criteria

13.2.9 The ceding insurer should give due consideration to the risk posed by a mismatch in terms and conditions between reinsurance contracts and
the underlying policies. The ceding insurer may bear a greater net exposure than it initially intended because of this gap.

**Criteria and procedures for purchasing facultative cover**

13.2.10 The ceding insurer should have appropriate criteria in place for the purchase of facultative coverage. Any facultative reinsurance coverage bought should be linked to the procedures for aggregations and recovery management.

13.2.11 The ceding insurer should have a specific process in place to approve, monitor and confirm the placement of each facultative risk. If facultative reinsurance is necessary to ensure that acceptance of a risk would not exceed maximum net capacity and/or risk limits, such reinsurance should be secured before the ceding insurer accepts the risk.

**Operational risk related to contract documentation**

13.2.12 In order to reduce the risk and scope of future disputes, the ceding insurer and the reinsurer should have in place processes and adequate controls to document the principal economic and coverage terms and conditions of reinsurance contracts clearly and promptly.

13.2.13 Ceding insurers and reinsurers should finalise the formal reinsurance contract without undue delay, ideally prior to the inception date of the reinsurance contract.

13.2.14 All material reporting due to and from reinsurers should be timely and complete, and settlements should be made as required by the reinsurance contract.

13.2.15 The ceding insurer should consider how its reinsurance contracts will operate in the event of an insolvency of itself or its reinsurer.

13.2.16 The supervisor should have access, on request, to material reinsurance documentation. In case of indications of significant uncertainties in terms of reinsurance documentation, the supervisor should take into account the resulting underwriting, operational and legal risks when considering the effects of reinsurance on the ceding insurer’s solvency.

**13.3 The supervisor requires ceding insurers to demonstrate the economic impact of the risk transfer originating from their reinsurance contracts.**

13.3.1 The supervisor should regard as a reinsurance contract an agreement that transfers sufficient insurance risk to be considered insurance under jurisdictional rules.

13.3.2 In general, a contract should be considered as a loan or deposit if, during its development, the ceding insurer has the unconditional obligation to indemnify the reinsurer for any negative balances that may arise out of the contractual relationship. This characteristic does not result in risk transfer. All liabilities of the ceding insurer should be contingent on the proceeds of the underlying insurance business.

13.3.3 Upon request from the supervisor, the ceding insurer should provide sufficient information about its reinsurance contracts to allow the
supervisor to make informed judgments about the substance of the risk transfer (ie, the degree of risk transfer in an economic sense).

13.3.4 Where there are concerns of inappropriate reporting with respect to the degree of risk transfer, the supervisor should assess the substance of the reinsurance contract entered into by the ceding insurer and how it has been reported by the ceding insurer. Further, the supervisor should be able to assess the impact that the ceding insurer’s reinsurance contracts have on the ceding insurer’s capital requirements. The supervisor should challenge Senior Management of the ceding insurer on the purpose of individual contracts where appropriate.

Finite reinsurance

13.3.5 Finite reinsurance is a generic term that, for the purposes of this ICP, is used to describe a spectrum of reinsurance arrangements that transfer limited risk relative to aggregate premiums that could be charged under the contract.

13.3.6 Finite reinsurance transactions are legitimate forms of reinsurance arrangements; however, it is essential that they are accounted for appropriately. In particular, only contracts that transfer sufficient insurance risk in order to meet the requirements of the relevant accounting standards in force in each jurisdiction can be accounted for as reinsurance.

13.3.7 The supervisor should pay particular attention to reinsurance contracts that have, or appear to have, limited levels of risk transfer which may change over the duration of the contract. Only the amount of risk transferred under finite reinsurance contracts should be included in the regulatory capital calculations of the ceding insurer.

13.4 When supervising ceding insurers purchasing reinsurance across borders, the supervisor takes into account the supervision performed in the jurisdiction of the reinsurer.

13.4.1 The cross-border nature of reinsurance transactions, together with the relative sophistication of the market participants involved in reinsurance, are key elements that the supervisor should consider when supervising ceding insurers.

13.4.2 Taking into account the supervision performed in the jurisdiction of the reinsurer may help the supervisor to assess the overall risk profile of the ceding insurer. This can be done, for example, by reviewing the supervisory framework and practices in the jurisdiction of the reinsurer, or by engaging in supervisor-to-supervisor dialogue.

Supervisory recognition

13.4.3 The supervisor can benefit from relying on supervision performed in the jurisdiction of the reinsurer. Benefits may include, for example, strengthened supervision as well as a more efficient use of resources by the supervisor of the ceding insurer.

13.4.4 Where supervisors choose to recognise aspects of the work of other supervisory authorities, they should consider putting a formal supervisory recognition arrangement in place (see ICP 3 Information Sharing and Confidentiality Requirements).
13.4.5 Supervisory recognition can be conducted through unilateral, bilateral and multilateral approaches to recognition. All three approaches recognise the extent of equivalence, compatibility or, at least, acceptability of a counterparty’s supervisory system. Bilateral and multilateral approaches typically incorporate a mutuality component to the recognition element, indicating that this is reciprocal.

13.5 The supervisor requires the ceding insurer to consider the impact of its reinsurance programme in its liquidity management.

13.5.1 Given the nature and direction of cash flows within a ceding insurer, liquidity risk historically has not been considered to be a major issue in the insurance sector. However, there can be liquidity issues within an individual ceding insurer which could arise specifically from the ceding insurer’s reinsurance programme.

13.5.2 Reinsurance contracts do not remove the ceding insurer’s underlying legal liability to its policyholders. The ceding insurer remains liable to fund all valid claims under contracts of insurance it has written, regardless of whether they are reinsured or not. For this reason, a large claim or series of claims could give rise to cash flow difficulties if there are delays in collecting from reinsurers or in the ceding insurer providing proof of loss to reinsurers.

13.5.3 The supervisor should require ceding insurers to take appropriate measures to manage their liquidity risk, including funding requirements in adverse circumstances. As with all risks, the insurer should develop its own response to the level of risk it faces and the supervisor should assess these responses. There are a number of ways in which liquidity risk may be mitigated. For example, some insurers choose to arrange a line of credit from a bank in order to deal with short-term liquidity issues.

13.5.4 Ceding insurers may make arrangements with their reinsurers in order to mitigate their liquidity risk. These arrangements, if used, may include clauses that trigger accelerated payment of amounts due from reinsurers in the event of a large claim and/or the use of collateral or deposit accounts, giving ceding insurers access to funds as needed. Use of such arrangements is a commercial matter between the ceding insurer and reinsurer.

13.5.5 External triggers can give rise to liquidity issues, especially where reinsurers have retroceded significant amounts of business. If a reinsurance contract contains a downgrade clause that gives the ceding insurer the right to alter the contract provisions, or obliges the reinsurer to post collateral with a ceding insurer to cover some or all of its obligations to that ceding insurer, such action may cause liquidity issues among reinsurers and may be pro-cyclical. Therefore, the supervisor should be aware of the potential consequences of such triggers for the overall efficiency and stability of the market.

13.6 In jurisdictions that permit risk transfer to the capital markets, the supervisor understands and assesses the structure and operation of such risk transfer arrangements, and addresses any issues that may arise.
A wide range of techniques has been developed to allow the transfer of insurance risk to the capital markets, resulting in a diversity and complexity of risk transfer arrangements.

In general, arrangements used to enable risk transfer to the capital markets operate like mainstream reinsurance. For example, risk is transferred via a reinsurance contract with similar terms and conditions to any other reinsurance contract. Further, the risk assuming entity is a reinsurer subjected to licensing conditions like any other reinsurer. The defining feature of these risk transfer arrangements is the direct funding of the reinsurance risk exposure with funds raised, often exclusively, in the capital markets.

Insurance risk transfer to the capital markets can occur by making use of a wide variety of arrangements. Arrangements in the non-life sector are often broadly classified into four groups: (1) catastrophe bonds (cat bonds); (2) collateralised reinsurance; (3) industry loss warranties (ILWs); and (4) 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 (ie a debt security) issued to fund an insurance exposure, usually a catastrophe;
- collateralised reinsurance is generally used to highlight a credit risk mitigation feature of certain insurance transactions (ie the collateralisation of the insurance exposure);
- ILWs refer to a range of financial instruments used by counterparties, who may or may not be insurers, to buy or sell protection related to insurance risks; and
- sidecars refer to a legal entity created ‘on the side’ of an insurer that is used to transfer insurance risk, usually to the capital markets.

To illustrate that these are not mutually exclusive, 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.

In the life sector, some arrangements are similar to the non-life sector (for example, mortality bonds, which operate like cat bonds). Other life insurance arrangements have specific features that are not used in non-life insurance, such as the funding of certain portions of the ceding insurer’s reserves.

Despite the many similarities with mainstream insurance, transactions transferring insurance risk to the capital markets have special features that the supervisor should bear in mind in order to assess the appropriateness and effectiveness of their use by ceding insurers and reinsurers.

Initial assessment

Insurance risk transfer to the capital markets usually entails the creation of a dedicated entity or a legally ring-fenced arrangement, specifically constituted to carry out the transfer of risk. These are referred to by a
variety of names, such as special purpose vehicles, special purpose reinsurance vehicles, or special purpose insurers; for the purpose of the ICPs, they are collectively referred to as special purpose entities (SPEs).

13.6.7 The main purpose of an SPE is to assume insurance risk, funding the exposure by raising funds in the capital markets, and to be dismantled once its purpose has been fulfilled. Importantly, as SPEs conduct insurance business, the supervisor should consider licensing them as insurers (see ICP 4 Licensing). Licensing of SPEs should be appropriately tailored to take into consideration the unique characteristics of SPEs. In this respect, close collaboration among those supervising ceding insurers and those supervising SPEs before authorisation of the SPE and on an ongoing basis can be particularly helpful.

13.6.8 Key elements of any SPE structure include:

- the insurance risk that it assumes is “fully funded” (ie, that the exposure taken by the SPE is funded across a range of foreseeable scenarios from the time the SPE goes on risk to the time it comes off risk);
- the claims of any investors in the SPE are subordinate to those of the ceding insurer; and
- the investors in the SPE have no recourse to the ceding insurer in the event of an economic loss.

13.6.9 In order to be able to understand and assess whether an SPE structure meets the criteria above, the supervisor should take the following into account:

- ownership structure of the SPE;
- suitability of the Board and Senior Management of the SPE;
- the SPE’s management of credit, market, underwriting and operational risks;
- investment and liquidity strategy of the SPE;
- ranking and priority of payments;
- extent to which the cash flows in the SPE structure have been stress tested;
- arrangements for holding the SPE’s assets (eg trust accounts) and the legal ownership of the assets;
- extent to which the SPE’s assets are diversified; and
- use of derivatives, especially for purposes other than risk reduction and efficient portfolio management.

13.6.10 Understanding the role of all the parties to the SPE arrangement is critical to understanding the underlying risks, particularly as these may be fundamentally different from those involved in a traditional reinsurance transaction. The supervisor should understand and assess, among other things, the:
• extent to which key parties have been fully disclosed (eg sponsor, (re)insured, investors, advisors, counterparties) and are known to the supervisor;
• extent to which potential conflicts of interest between all parties to the SPE have been adequately disclosed and addressed (such as situations where sponsors also take a managing role);
• credit risk associated with key service providers, including financial guarantors used to protect the position of investors;
• degree of basis risk that is assumed by the ceding insurer and to what extent this could have immediate ramifications for the ceding insurer’s financial position in case of a loss;
• details of the SPE’s management arrangements and key personnel;
• third party assessments of the SPE structure (eg by credit rating agencies);
• expertise of the legal advisors involved;
• robustness of any financial or actuarial projections, if applicable (eg if triggers are indemnity based); and
• disclosure of outsourcing agreements.

13.6.11 As many SPEs are designed to operate with a minimum of day-to-day management, the supervisor should understand and assess the extent to which the systems of risk management and internal controls are adequate and proportionate to the nature of the underlying risks and to the complexity and expected lifespan of the SPE structure.

13.6.12 The systems of risk management and internal controls of the SPE should ensure that, at least:

• investment restrictions are not breached;
• interest payments, dividends, expenses and taxes are properly accounted for;
• movements above established thresholds in assets and collateral accounts are reported;
• assets are legally existent and technically identifiable; and
• liabilities can be determined on a timely and accurate basis and obligations satisfied in accordance with the underlying contracts.

13.6.13 The supervisor should understand and assess:

• the systems of risk management and internal controls of the SPE, particularly the extent to which these are sufficient to ensure effective operation in compliance with the SPE’s legal and supervisory obligations; and
• operational risks within the SPE structure and any mitigation arrangements.
Basis risk

13.6.14 The supervisor should understand and assess the extent to which SPE arrangements give rise to basis risk. This arises where the trigger for indemnity under the SPE arrangement is different from the basis on which underlying protected liabilities can arise.

13.6.15 Where SPEs contain indemnity triggers (ie, recovery from the SPE is based on the actual loss experience of the ceding insurer) basis risk is unlikely to be an issue. However, many SPEs contain non-indemnity triggers, such as parametric triggers (driven by objectively measurable events) or modelled triggers (driven by the outcome of modelled, industry-wide losses). In such cases, there may be events where the ceding insurer will remain exposed to its underlying policyholders without having recourse to the SPE.

13.6.16 Basis risk should be considered with reference either to the amount of credit given by the supervisor of the ceding insurer for the SPE arrangement or in the capital requirement of the ceding insurer, where such mechanisms are used.

13.6.17 Additionally, in some jurisdictions the accounting and regulatory treatment of insurance risk transfer that uses non-indemnity triggers may be different from the accounting treatment of indemnity-based insurance. The supervisor should understand these accounting differences and the impact these may have on the financial statements of the ceding insurer and the reinsurer.

Ongoing Supervision

13.6.18 The supervisor should understand the various issues that emerge in the ongoing supervision of SPEs and their use. Consideration should be given to the following areas:

- measures to be taken by the supervisor if any of the licensing or authorisation conditions are breached;
- level of capital and ability of the SPE to continue to respond adequately should covered events occur;
- level of reporting required by the supervisor in order to understand and assess whether the SPE is complying with its obligations;
- the SPE’s response in the event of fluctuations in the values of invested assets (eg match/mismatch between collateral account and exposure, flow of premiums, fees, commissions);
- arrangements put in place in the SPE to ensure that the “fully funded” condition is maintained in the case that the insurance risks assumed are rolled over from one risk period to another; and
- where the SPE undertakes multiple transactions, arrangements put in place in the SPE to ensure that the funds corresponding to each transaction are appropriately segregated and legally insulated.

Unwinding of SPE arrangements
13.6.19 The unwinding of SPEs is often influenced by the dynamics of insurance losses. The supervisor should understand and gain comfort with the provisions in place to require orderly unwinding of SPEs. In particular, the supervisor should understand the process related to the generation, mitigation and management of any residual risk emerging from the unwinding of the SPE.

13.6.20 In addition, the supervisor should understand the process and stages that the SPE goes through when it comes to a natural end and its obligations have been fulfilled and the SPE is liquidated. There is a distinction between unwinding in the event of a loss and unwinding a transaction reaching legal maturity (without a loss having occurred). While the latter case is usually simple and straightforward, unwinding in a full or partial loss situation deserves close attention. Consideration should be given to the following areas:

- issues relating to share buy-back and conditions to its materialisation;
- issues relating to disposal of the investment portfolio;
- “dismantling” of the SPE and residual risks;
- where the SPE undertakes multiple transactions, issues relating to the segregation and legal insulation of assets per transaction; and
- supervisory issues relating to risks which revert to the ceding insurer on termination of the arrangement.

Considerations for supervisors of insurers ceding risks to SPEs

13.6.21 Although in many jurisdictions insurance risk transfer to the capital markets is not permitted, the supervisor should consider that some of the insurers in its jurisdiction may be transferring insurance risk to SPEs located in another jurisdiction that permits insurance risk transfer to the capital markets. In this case, the supervisor of the ceding insurer should consider, among other things:

- whether the risk transfer taking place involves an SPE that is licensed in the jurisdiction where the insurance risk is assumed;
- the supervisory regime to which the SPE is subject in its jurisdiction; and
- the extent to which the ceding insurer has adequately provided for the identification, assessment and management of the risks associated with transferring insurance risk to an SPE (eg credit risk, basis risk).
ICP 14   Valuation
The supervisor establishes requirements for the valuation of assets and liabilities for solvency purposes.

Introductory Guidance

Application

14.0.1 The IAIS considers it is most desirable that the methodologies for calculating items in general purpose financial reports can be used for, or are substantially consistent with, the methodologies used for regulatory reporting purposes, with as few changes as possible to satisfy regulatory requirements. However, the IAIS also recognises that this may not be possible or appropriate in all respects, considering the differing purposes. The IAIS believes it is essential that differences between general purpose financial reports and published regulatory reports are publicly explained and reconciled.

14.0.2 The IAIS considers that differences between technical provisions for general purpose financial reports and published regulatory reports should be publicly explained and reconciled in terms of differences in data, discount rate, methodology and assumptions used together with the rationale for why any different approach is appropriate for solvency purposes.

14.0.3 To the extent that financial reporting standards, including IFRS, are consistent with the standards in this ICP, valuations that are in accordance with those financial reporting standards may be regarded as compliant with this ICP.

14.0.4 The context and purpose of the valuation of assets or liabilities of an insurer are key factors in determining the values that should be placed on them. This ICP considers the valuation requirements that should be met for the purpose of the solvency assessment of insurers within the context of IAIS risk-based solvency requirements that reflect a total balance sheet approach on an economic basis and address all reasonably foreseeable and relevant risks.

14.0.5 Standard 17.1 states that the supervisor requires a total balance sheet approach to be used in the assessment of solvency to recognise the interdependence between assets, liabilities, regulatory capital requirements and capital resources and to require that risks are appropriately recognised. Such an approach ensures that the determination of available and required capital is based on consistent assumptions for the recognition and valuation of assets and liabilities for solvency purposes.

14.0.6 To achieve consistency with this approach to setting capital requirements in the context of a total balance sheet approach, capital

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3 An economic basis may include amortised cost valuations and market-consistent valuations that comply with this ICP.

4 The total balance sheet approach is an overall concept rather than one which implies the use of a particular methodology such as a cost of capital method or a percentile method.
resources should broadly be regarded as the difference between assets and liabilities, but on the basis of their recognition and valuation for solvency purposes.

Solvency purposes

14.0.7 The valuation "for solvency purposes" referred to in this ICP is the valuation of the assets and liabilities used within the broad concept of a risk-based solvency assessment of insurers.

14.0.8 Solvency assessment results from the application of supervisory judgment to various measures and estimates of an insurer’s current financial position and future financial condition which serve to demonstrate the insurer’s ability to meet its policyholder obligations when they fall due. Useful in this regard is a set of financial statements which may differ from those used for general purpose financial reporting. To distinguish them, this ICP refers to the financial statements used for solvency assessment as “regulatory financial statements”. Such statements include a regulatory balance sheet and regulatory capital requirements. For the purposes of this ICP, “valuation for solvency purposes” refers to valuation of assets and liabilities in the regulatory financial statements. The overall solvency assessment may use information additional to the regulatory financial statements such as:

- stress and scenario testing;
- the insurer’s own risk and solvency assessment; and
- relevant disclosure.

14.0.9 Technical provisions are a significant component of valuation for solvency purposes. They include a margin for risk appropriate for solvency purposes. Regulatory capital requirements are another component of the solvency assessment, and they include further allowance for risk so that when taken together, they are sufficient to ensure that policy obligations are satisfied with the probability of sufficiency required by the supervisor.

14.0.10 In adverse circumstances, certain assets may be considered to have reduced or nil value. Consequently, in the capital adequacy assessment such assets may be excluded from or have reduced value in capital resources. Alternatively, a capital requirement may be set to cover the potential shortfall in value. Such adjustments are part of the process of determining capital requirements and/or capital resources and are covered by ICP 17 Capital Adequacy. These adjustments are shown separately from asset values in the regulatory financial statements. This enables improved transparency, consistency and comparability.

14.1 The valuation addresses recognition, derecognition and measurement of assets and liabilities.

14.1.1 Assets and liabilities should be recognised and derecognised to the extent necessary for risks to be appropriately recognised. Such recognition/derecognition principles may differ from those used for general purpose financial reporting in a jurisdiction.

14.1.2 Recognition of insurance contracts as part of the valuation of technical provisions is a significant issue for insurers and supervisors. There are
two key possible points of recognition – on entering into a binding contract (the bound date) and the inception date of the contract. In principle, the bound date is the date at which an economic obligation arises. However, in practice, these dates are only likely to be significantly different for certain classes of non-life insurance.

14.1.3 Contracts for ceded reinsurance should be recognised and valued so as to correspond to the recognition of the risks which they are mitigating. Where a current reinsurance policy is contracted to cover future direct policies, the value of the reinsurance policy should not include any amount in respect of future direct policies that have not been recognised.

14.1.4 An insurance contract liability (or a part of an insurance contract liability) within technical provisions should be derecognised when, and only when, it is extinguished – ie when the obligation specified in the insurance contract is discharged or cancelled or expires.

14.1.5 The purchase of reinsurance should not result in the derecognition of technical provisions unless the purchase of that reinsurance results effectively in the extinguishment or novation of the insurance contracts.

14.2 The valuation of assets and liabilities is undertaken on consistent bases.

14.2.1 Solvency assessment based on consistent valuation of assets and liabilities is a prerequisite for obtaining a meaningful insight into the asset-liability positions of an insurer and an understanding of the financial position of an insurer relative to other insurers. It provides reliable information on which to base the actions that are taken by insurers and their supervisors in respect of those positions.

14.2.2 The overall financial position of an insurer should be based on the consistent measurement of assets and liabilities, the explicit identification and consistent measurement of risks and their potential impact on all components of the balance sheet. This consistency should apply to all assets and liabilities, including assets in excess of the liabilities, and extend across insurers and time periods so as to achieve comparability.

14.2.3 Undertaking valuation on consistent bases means that differences in values of assets and liabilities can be explained in terms of the differences in the nature of the cash flows including their timing, amount and inherent uncertainty, rather than differences in methodology or assumptions. Such consistency may be applied at different levels such as segment within a company, a company or a group.

14.2.4 Observed market valuations or amortised cost valuations may be used for some assets and liabilities, while valuation models, such as discounted cash flow models, may be used for other assets and liabilities. Calibration of such discounted cash flow models to market valuations or amortised cost of other assets and liabilities can be of assistance in achieving consistency.

14.2.5 The specific characteristics of insurance contracts, financial instruments and data available may vary within and across jurisdictions. Consistency in the valuation of assets and liabilities means that such variations can be explained in terms of the differences in the nature of the cash flows valued in each jurisdiction.
14.2.6 Regulatory capital requirements are determined using a consistent treatment of the valuation of assets and liabilities. Consistency in the valuation of assets and liabilities for solvency purposes does not necessarily mean that a single valuation basis is used for all assets and liabilities. The balance sheet, when taken together with capital requirements, should result in an appropriate recognition of risks.

14.3 The valuation of assets and liabilities is undertaken in a reliable, decision useful and transparent manner.

Reliability

14.3.1 The values placed on the assets and liabilities of an insurer for solvency purposes should be a reliable measure of their value at the date of solvency assessment.

14.3.2 Objectivity is an important aspect of valuing assets and liabilities in a reliable manner, so that a valuation is not influenced inappropriately by an insurer’s management. The valuation of assets and liabilities typically involves judgment, e.g., expert judgment in assessing the relevance of data and deriving assumptions. Consistent with reliability of outcome, subjectivity in valuation should be reduced as far as practicable. This may be achieved by using information available from effective internal control processes, market valuations and other relevant current or factual information, by applying professional standards and subjecting valuations to independent review. The supervisor should require a valuation methodology which uses information provided by the financial markets and generally available data on insurance technical risks. Company-specific information may be appropriate, for example, where the insurer’s business model and practices are sufficiently substantiated as representative of the portfolio and similar information is used in market valuations.

Decision usefulness

14.3.3 In the context of this standard, ‘decision useful’ means useful in making judgments for solvency purposes. It should be recognised that, in valuing assets and liabilities in a reliable manner, and in reducing the subjectivity in the valuation, it may not be appropriate to eliminate subjectivity completely. A method that provides a single value without the need for judgment may be less decision useful than one that produces a range of reasonable values from which a value is selected by applying judgment. A method that produces a decision useful outcome should take precedence over one that does not.

14.3.4 In some jurisdictions, enforcement actions can only be based on objective calculations. In those jurisdictions, an objective calculation should take precedence over one based on subjective assumptions and methods. Supervisors may need to provide greater specificity on assumptions (e.g., mortality and interest) and methods for regulatory purposes. Specified methodology should include a margin for risk that is appropriate for a valuation done for solvency purposes.

14.3.5 Decision useful values may be derived from a range of sources, including market-consistent valuations, amortised cost valuations and other valuation models, such as discounted cash flow projection models.
14.3.6 Where there is a market for an asset or liability in which prices are quoted publicly and trades are readily available, the quoted prices could provide a decision useful value of the asset or liability in the large majority of situations. Typically, there will be a range of market prices for the same item, and judgment will be needed in determining the final value.

14.3.7 In some circumstances, a market price may not necessarily provide a decision useful basis for a valuation. If the reference market is dysfunctional or anomalous in its operation, a more reliable method of determining value based on more normal conditions may be appropriate. Such circumstances may occur, for example, if there is a high cost in making actual trades, trading is thin, independent pricing sources are not available or are limited, or the market is subject to distorting influences. The supervisor should evaluate such circumstances and as a result may conclude that the use of an alternative economic valuation is appropriate.

14.3.8 Amortised cost could be a decision useful value for assets and liabilities where it is a reflection of the amount the insurer will pay and receive over time, and fluctuations in market values are not indicative of the insurer’s ability to meet its obligations. Amortised cost may provide a pragmatic and decision useful value when other valuation approaches are no more useful or reliable. It is useful to complement such valuations with sensitivity and adequacy testing.

14.3.9 An insurer’s modelling of its assets and liabilities may also provide a decision useful value. The reliability of model results is enhanced through the use of insurers’ and supervisors’ best practices surrounding model governance, controls and independent review. Supervisory comparisons or benchmarking of modelling practices can further enhance the reliability of modelled results. Models can be used to apply common measurement criteria across all risks (eg same methodology, time horizon, risk measure, level of confidence, etc.)

14.3.10 The supervisor should evaluate the extent to which the time value and risk adjustments add decision useful information. Where this is not the case, the disclosure requirements may be relied upon. For liabilities subject to significant litigation uncertainty, it may not be appropriate to include estimates of time value and risk in the reported liability, due to the unreliability of such adjustments.

**Transparency**

14.3.11 The solvency regime should be supported by appropriate public disclosure and additional confidential reporting to the supervisor. For example, explicit determination of the components of the technical provisions supports the objectives of transparency and comparability and facilitates convergence. Standards for public disclosure including the valuation of assets and liabilities for solvency purposes can be found in ICP 20 Public Disclosure.

14.3.12 Insurers should provide sufficient information about the approaches they have taken to the valuation of assets and liabilities, describing how the principles of reliability, decision usefulness and consistency have been addressed. Transparency facilitates understanding and comparability within and across jurisdictions.
14.4 The valuation of assets and liabilities is an economic valuation.

14.4.1 An economic valuation is 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. Such an approach is appropriate in the context of risk-based solvency requirements which satisfy these ICPs and standards and shares their objectives of transparency and comparability.

14.5 An economic valuation of assets and liabilities reflects the risk-adjusted present values of their cash flows.

14.5.1 An economic value should reflect the prospective valuation of the future cash flows of the asset or liability allowing for the riskiness of those cash flows and the time value of money. An asset or a liability may have both cash inflows and cash outflows the net effect of which is a positive or negative value. Such a valuation is not necessarily determined directly using a discounted cash flow calculation. A current quoted market value or a current sale or purchase value may also reflect the prospective valuation of cash flows.

14.5.2 Supervisors should take into account all relevant information available about current market assessments of value and risk and the principles, methodologies and parameters used in the relevant markets for assessing the value of an asset or liability.

14.5.3 The historic cost of an asset or liability may not reflect a current prospective valuation of the future cash flows and may therefore not be consistent with the current economic valuation of other assets or liabilities. Historic cost generally does not reflect changes in value over time. However, amortised cost, which adjusts the historic cost of an asset or liability over time, may reliably reflect the value of future cash flows, when used in conjunction with an adequacy or impairment test.

14.5.4 Some jurisdictions utilise a subset of economic valuation known as market-consistent valuation which is described further in Guidance 14.5.5 to 14.5.11. Some jurisdictions use a subset of economic valuation known as amortised cost valuation which is described further in Guidance 14.5.12 to 14.5.15.

**Market-consistent valuation**

14.5.5 It may be appropriate to use market-consistent values for the economic valuation of assets and liabilities. A valuation that is based upon principles, methodologies and parameters that the financial markets would expect to be used is termed a market-consistent valuation. Where a range of assessments and approaches is evident from a market, a market-consistent valuation is one that falls within this range.

14.5.6 It may be well known to financial markets that the approach taken to market assessments for some assets and some insurance liabilities or their components uses modelling based on certain assumptions and techniques and portfolio specific information as well as generally available data on insurance technical risks. A calculation consistent with this approach would be market-consistent.
14.5.7 However, in exceptional circumstances there may be information additional to that on market assessments from the wider economy that should be taken into account eg where a market is anomalous, not operating effectively or is subject to intervention from the relevant authorities. For example, where a government/regulator intervenes in a major way eg by injecting money or taking control. Such action may be in response to or the cause of distortions of supply and demand in relevant markets so that values determined in a market consistent way may also be distorted temporarily.

14.5.8 A market-consistent value may not then be appropriate and a different value, which may, for example, be expected to be market-consistent under more normal market conditions, may need to be determined to arrive at an economic valuation for solvency purposes. The extent to which this is appropriate is likely to vary according to market conditions in different jurisdictions. If such circumstances arise, supervisors should provide guidance as to the appropriate values or adjustments insurers should use for solvency purposes to reflect the risk-adjusted present value of their cash flows and maintain consistency, decision usefulness, relevance and transparency.

14.5.9 A sufficiently active market may exist for an asset or liability that in itself provides a measure of value that is market consistent. For other assets and liabilities or when the market becomes illiquid, there may be no direct measure of value. However, relevant market information may be available regarding the assessment of components of the rights, obligations or risks of the asset or liability. If, for example, a component of the obligations of an insurance liability can be replicated using financial instruments for which there is a reliable market value, that value provides a reliable indication of the value for this component.

14.5.10 The market-consistent value of an asset or liability may be determined using different techniques, or a combination thereof. For example, in valuing technical provisions:

- if the insurance obligations are traded in a sufficiently deep and liquid market the observed prices may be used to arrive at a market consistent value. The availability, decision usefulness and reliability of the prices should be taken into account when deriving the market consistent value;

- if some or all of the cash flows associated with the insurance obligations can be replicated using financial instruments, the market value of the replicating financial instruments may be used as the value of those cash flows;

- if the cash flows associated with the insurance obligations cannot be replicated perfectly, then the remaining cash flows may be valued using a discounted cash flow model. To be market consistent, the methodology used needs to deliver a proxy for market value based on market consistent valuation principles and to reflect the uncertainty or unavailability of market information.

14.5.11 This approach to valuation is sometimes termed the “components approach”, under which risk components are valued at market value
where such a value is ascertainable, decision useful and reliable; other components may need to be valued using marked-to-model methods. Separate components may, for example, be identifiable for insurance contracts which have an investment or deposit component and an insurance risk component. The components approach helps to improve market consistency and reduce modelling error. It should be noted that where there is no sufficiently deep liquid market from which to determine a market consistent value for a risk component, the additional liquidity risk needs to be considered.

Amortised cost valuation

14.5.12 It may be appropriate to use an amortised cost method for economic valuation of assets and liabilities. Amortised cost methods determine the value of an asset or liability at any point in time as the present value of future cash flows discounted at an appropriate interest rate, with an appropriate adjustment for risk.

14.5.13 The discount rate used in valuing assets under an amortised cost method equates the present value of expected contractual cash flows with the amount paid to acquire the asset. The price paid for an asset usually equals the market value at time of purchase. Since the price paid reflects the risk of the instrument at the time of purchase, an adjustment for the risk assessed at that time is automatically included in the discount rate.

14.5.14 When valuing both assets and liabilities under an amortised cost method, there is a close relationship between the discount rate and the provision for risk. The discount rate used may be based on the expected yield, after making allowance for default, of the supporting asset portfolio. Other combinations of discount rate and risk adjustment are possible.

14.5.15 When an amortised cost method is used, the values produced should be evaluated for adequacy at least annually. For assets, when the asset has been impaired to a significant degree, the carrying value of that asset should be adjusted to reflect that impairment. For liabilities, the value should be tested at least annually. When the liability value is found to be inadequate, it should be strengthened. Adjustments should also be made to reduce any significant, undue conservatism identified by the adequacy test.

14.6 The value of technical provisions and other liabilities does not reflect the insurer’s own credit standing

14.6.1 To achieve consistent and reliable economic values of insurance portfolios for solvency purposes, the value of technical provisions should not reflect an insurer’s own credit standing. Insurance obligations are required to be met to the same level of confidence by all insurers in a jurisdiction and the value of an identical portfolio held by different insurers should not depend on the insurer’s credit standing. This also applies to the technical provisions of a reinsurer.

14.6.2 However, the credit standing of a reinsurer should be taken into account when considering the solvency of a ceding (re)insurer even if the contractual cash flows are the same. The risk of reinsurer default could be covered either by the regulatory capital requirements or adjustments made to the value of assets in determining available capital.
Alternatively, some allowance for the credit default risk could be made in valuing the reinsurance asset directly.

14.6.3 The valuation of liabilities, other than technical provisions, should also not reflect the insurer’s own credit standing.

14.6.4 Where the terms of the debt make it subordinate to the insurer’s obligations in respect of insurance contracts, the value of the debt may reflect the lower probability of repayment under subordinated debt and the lower capital needed to cover the risk of non-payment.

14.7 The valuation of technical provisions exceeds the Current Estimate by a margin (Margin over the Current Estimate or MOCE).

14.7.1 Technical provisions are assets or liabilities that represent the economic value of the insurer fulfilling its insurance obligations to policyholders and other beneficiaries arising over the lifetime of the insurer’s portfolio of insurance policies. This includes a margin (Margin Over the Current Estimate or MOCE) to cover the inherent uncertainty of those obligations.

14.7.2 The cash flows associated with fulfilling an insurer’s insurance obligations include the premiums receivable, the claims payable under the insurance policies, any other policy cash flows (eg future distributions under participating contracts) and the future expenses of administering the policies.

14.7.3 Acquisition costs are usually a significant component of an insurer’s cash flows. After acquisition costs have been paid future cash inflows may exceed future cash outflows.

14.7.4 Because an insurer’s obligations under an insurance policy are inherently uncertain as to amount and/or timing, the present value of the cash flows associated with fulfilling them has a range of possible values with varying probabilities. The probability-weighted average of these present values is their expected present value (also called the statistical mean) and is termed the “current estimate of the cost of meeting the insurance obligations” (“Current Estimate”). Actuarial and statistical techniques may be used in determining the current estimate, including deterministic, analytical and simulation techniques.

14.7.5 In addition to covering the cash flows associated with fulfilling insurance obligations, an insurer incurs the cost of covering the uncertainty inherent in those cash flows (eg through holding capital, or through hedging, reinsurance or other forms of risk mitigation). Insurers are required to maintain an amount such that the obligations under insurance policies will be fulfilled with the claimant or beneficiary when they fall due. In principle, therefore, an economic value of the technical provisions exceeds the current estimate of the cost of meeting the insurance obligations by an amount covering this uncertainty. This excess is the MOCE.

14.7.6 Where, for example, capital is required to give the level of confidence required by the solvency regime, the technical provisions should at least also cover the cost of holding that capital. In these circumstances, the MOCE might be seen as a provision for rewarding the capital committed to the business over the outstanding lifetime of the policy. As the
uncertainty reduces over time, so the MOCE will also reduce, gradually releasing it from the technical provisions. Equally, as uncertainty reduces, the required capital would also reduce in line with the revised risk profile.

14.7.7 It may not be necessary, in practice, to determine the current estimate and the MOCE separately. The solvency regime should require any method by which technical provisions are valued to be such that the value includes an explicit or implicit margin over the current estimate. For example, a reliable market valuation by reference to a sufficiently deep and liquid market may be expected automatically to include a MOCE.

14.7.8 A model which includes in its calculations an allowance for uncertainty up to the level of confidence required by the solvency regime is also capable of calculating the technical provisions directly. However, in this case, supervisors should consider whether the current estimate and MOCE should be separately reported to help ensure that technical provisions are consistent and reliable.

14.7.9 A change in underlying data or assumptions generating a change in current estimate and MOCE should be disclosed and justified so that consistency, reliability and relevance may be maintained and arbitrary changes over time are avoided.

14.8 The Current Estimate reflects the expected present value of all relevant future cash flows that arise in fulfilling insurance obligations, using unbiased, current assumptions.

14.8.1 The current estimate should reflect all future cash flows under an existing insurance contract to the extent that they are integral to the fulfilment of the obligations under that contract. This encompasses all cash flows, including non-guaranteed optional or discretionary cash flows, where they are established as stemming from the contractual relationship between the insurer and the policyholder. This reflects the commercial substance of the contract and therefore reflects economic reality.

14.8.2 An insurance contract should be considered as a whole. In particular, where the contract provides for the payment of future premiums, such premiums are integral to the fulfilment of the obligations under that contract. Neither the company nor the policyholder is able to deal with one without simultaneously dealing with the other. To recognise one, the other must also be recognised. Valuation of the insurance liability requires consideration of all of the associated cash flows, including the contractual, premium inflows. The uncertainty associated with those cash flows along with that of the other relevant cash flows are reflected in the probability weightings applied in calculating the current estimate.

14.8.3 To give clarity as to what constitutes an insurance contract for solvency purposes, the supervisory regime should specify the boundaries for insurance contracts which define the relevant cash flows to be included in determining the current estimate. The insurance contracts are subject to the following boundary constraints, if they exist:5

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5 For certain types of long-duration life policy with an indefinite term, these would be evaluated through the potential life of the policyholder, allowing for lapse or surrender in the probabilities attached to each cash flow.
• contractual termination as extended by any unilateral option available to the policyholder, or
• the insurer having a unilateral right to cancel or freely re-underwrite the policy, or
• both the insurer and policyholder being jointly involved in making a bilateral decision regarding continuation of the policy.

14.8.4 The first boundary constraint excludes new business arising from the “rolling-over” of the existing contract, except where such “roll-over” is due to the exercising of an explicit option available to the policyholder under the current contract. Contractual cash flows arising from policyholders’ unilateral in-the-money options to extend the contractual termination date should be included. The current estimate should allow for the expected rate of exercising such options. This boundary constraint also excludes additional voluntary contributions premiums, except where provided for as a unilateral option under the contract. For insurance contracts with variable premiums (such as universal life contracts), the cash-flows should include voluntary contributions above the minimum required to the extent that there are guarantees, under the current contract eg no-lapse and premium rate guarantees. The current estimate should reflect the expected rate of payment of additional contributions and the expected level of such contributions.

14.8.5 The second boundary constraint clarifies that future cash flows arising from events beyond the point where the insurer can unilaterally cancel the contract – for example, by re-underwriting are not included in the valuation. This is the case with most non-life insurance contracts which are typically written for only one year. Although there might be a high expectation that they would be renewed, the insurer is not bound to do so, and accordingly only cash flows arising in respect of the currently in-force or in run-off contracts, are included for valuation purposes, whereas the impact of new business might be considered in capital requirements or capital resources by the solvency regime. By contrast, future cash flows under a life or disability contract which the insurer cannot unilaterally cancel should be included, even if the future premiums under such a contract are planned to increase, or able to be varied by the insurer in respect of the entire class of contracts without individual underwriting.

14.8.6 The third boundary constraint clarifies that even if the policyholder has an option to continue or increase the contract, if it requires the insurer’s consent then cash flows arising from events beyond that point should not be included for valuation purposes, whereas the impact of new business might be considered in capital requirements or capital resources by the solvency regime.

Discretionary payments

14.8.7 Some insurance contracts give the policyholder both guaranteed benefits (eg a minimum amount payable on death and/or maturity or any insured event) and for example, a right to participate in the performance of the relevant class of contracts, related assets or both. The insurer has
some discretion over the amount or timing of the resulting distributions to policyholders, but there are often constraints over that discretion.

14.8.8 When establishing the future cash flows to include in the determination of technical provisions for solvency purposes, consideration should therefore be given to all payments whether or not these payments are contractually guaranteed under an insurance contract. For example, future discretionary bonuses which the insurer expects to make should be included.

14.8.9 In view of the wide variety of participating contracts and legal frameworks in different jurisdictions, supervisors should establish criteria appropriate to their jurisdictions for the allowance of discretionary elements associated with participating contracts in the valuation of technical provisions. These should nonetheless reflect the principles of a consistent, reliable and economic valuation and those that apply more specifically to technical provisions, as discussed in this ICP.

14.8.10 In many jurisdictions, accumulated profits attributable to a class of policyholders are accounted for separately by the insurer. Where such accumulated profits can be used to absorb losses to protect policyholder interests in a period of stress, they may possess all the characteristics of capital and may hence be recognised in the determination of capital resources for solvency purposes. In such a case, it is important to ensure that the criteria established by the solvency regime for the allowance of future discretionary benefits in the valuation of technical provisions are compatible with the criteria for determining capital resources in order to achieve a consistent overall assessment of the solvency position of the insurer.

Unbiased current assumptions

14.8.11 Unbiased current assumptions are derived from a combination of relevant, credible experience as well as judgment about its expected future development, eg improving mortality rates, inflation of expenses that neither deliberately overstates nor understates the expected outcome. Reconsideration of data and assumptions should occur every time the technical provisions are valued, with revisions made as appropriate to ensure data and assumptions remain appropriate to current conditions.

14.8.12 Observable data, such as interest rates, financial market prices and inflation rates may be expected to be different each time the current estimate is determined. In particular, cash flows are sensitive to inflation rates. Where assumptions are derived from observed values in the market, these should be the observed values current at the date of the valuation.

14.8.13 Regular experience analysis, considering the individual entity and relevant industry experience where appropriate, should be undertaken to support the assumptions used for insurance technical risks. Where assumptions depend on the results of such experience analyses, the most recent experience for the portfolio need not necessarily represent the most credible current assumption for that portfolio. Greater credibility may be achieved by the analysis of several years’ experience, smoothing out fluctuations in experience and allowing appropriately for any trends.
in experience that may be evident. However, care should also be taken that historical experience remains relevant to current conditions.

14.8.14 Where the credibility of an insurer’s own experience is low, for example for a small or new portfolio of insurance contracts, assumptions based on the relevant industry experience are likely to be more decision useful as a basis for projecting its cash flows.

14.8.15 The assumptions used should, in principle, reflect the characteristics of the portfolio rather than those of the particular insurer holding that portfolio. However, it is important to note that, in practice, the characteristics of the portfolio underwritten by an insurer may reflect aspects of an insurer’s specific business practices, particularly with regard its underwriting, claims handling and expenses. Company-specific information may be appropriate, for example, where the insurer’s business model and practices are sufficiently substantiated as representative of the portfolio and similar information is used in market valuations.

14.8.16 With respect to expenses, the insurer’s own expense experience in managing a portfolio is likely to be relevant in determining an economic value.

14.8.17 Acquisition costs are typically a major component of an insurer’s expenses. For most insurance contracts, acquisition costs will already have been incurred so that future cash flows include only maintenance and claims costs. An appropriate analysis of the insurer’s expense experience is needed to separate out acquisition costs in order to model future expenses. Care is needed to allow for expenses that do not vary directly with the level of new business so that expenses that will continue to be incurred for a period if new business ceases are taken into account.

14.9 The MOCE reflects the inherent uncertainty related to all relevant future cash flows that arise in fulfilling insurance obligations over the full time horizon thereof.

14.9.1 Different methods may be used in practice to measure risk. For some risks, observable market prices for risk may be available. In choosing a methodology, due consideration should be given to the nature of the risks being measured. Other approaches being considered around the world include quantile, conditional tail expectation, cost of capital and explicit assumption methods. Where a mixture of appropriate methods is used, a consistency check should be considered. Calibration of the methods used should reduce the effect of methodological differences to a level sufficient to enable reliable solvency assessment to be undertaken. At present, there is no one common methodology. In practice, the results from different methods will not be identical and calibration and consistency checks should be applied so that methodological differences are reduced to an acceptable level for solvency assessment purposes. Once established, the methodology should not be changed from one valuation to the next unless there is a reasonable rationale for change.

14.9.2 The margin over current estimate (MOCE) represents an estimated measure of the uncertainty inherent in the cash flows associated with fulfilling an insurer’s insurance obligations. To achieve a consistent,
reliable and decision useful valuation, the margin over current estimate should consider all of the inherent uncertainty attached to the policy obligations over the full period of those obligations ie the variability of all relevant future cash flows to the extent to which this uncertainty is borne by the insurer and not the policyholder.

14.9.3 Only risk inherent to the policy obligations should be reflected in the MOCE. Other risks should be reflected in regulatory capital requirements. Where risks are reflected in both the MOCE and regulatory capital requirements to provide an overall level of safety, double counting should be avoided as far as practical.

14.9.4 In some jurisdictions it may be considered appropriate, due to inherent uncertainty in policy obligations and profit, that no component of premium related to such considerations should be recognised in profit at the inception of a contract. In those jurisdictions, the inherent uncertainty is effectively represented by the difference between premium received and the Current Estimate. Other jurisdictions may take the view that one of the other methodologies described in this document provides a decision useful separate estimate of the level of uncertainty in determining the MOCE and may therefore allow potential gain at issue to be recognised.

14.9.5 It is important to be clear about the extent to which risk factors should be reflected when valuing the MOCE and to what extent. It is appropriate to differentiate between the risks specific to the portfolio of insurance obligations and the risks associated with the operations of the particular insurer. Risks that are portfolio specific are inherent to the policy obligations and should be taken into account in the MOCE.

14.9.6 In determining the appropriate methodology for determining the MOCE in a solvency regime, the supervisor should consider the extent to which possible methodologies promote transparency and comparability between insurers and insurance markets.

14.9.7 An appropriate method for the determination of the MOCE would be expected to exhibit the following characteristics:

- Insurance obligations with similar risk profiles have similar MOCEs;
- The less that is known about the cash flows; the higher the MOCE;
- For the same level of probability, risks with higher impact have higher MOCEs than those with lower impact;
- Risks with low frequency and high severity will generally have higher MOCEs than risks with high frequency and low severity;
- For risks of the same or a similar nature, contracts that persist over a longer timeframe will have higher MOCEs than those of shorter duration;
- Risks with a wide probability distribution have higher MOCEs than those risks with a narrower distribution; and
• To the extent that emerging experience reduces uncertainty, MOCEs should decrease, and vice versa.

14.9.8 In establishing appropriate criteria or methods for determining the MOCE, the supervisor should consider the diversification of the inherent risk factors reflected in the MOCE.

14.9.9 Consideration should be given to the segmentation of the insurance policies of the insurer into separate portfolios and the impact this has on the diversification of inherent risk factors that is taken into account. Segmentation, eg by line of business, may be undertaken for calculation purposes and may mean that diversification within portfolios is taken into account in the MOCE but diversification across portfolios is left out of account. The calculation method may also mean that diversification within portfolios is only partially taken into account. Any residual diversification within portfolios and all diversification across portfolios could for example be addressed as an offset to regulatory capital requirements, if appropriate. The MOCEs for the total business of the insurer would simply be the sum of the MOCEs of its portfolios.

14.9.10 Where an element of an insurance liability, ie an insurance obligation or risk in whole or in part, can be replicated or hedged by a financial instrument which has a reliable value, the value of that instrument provides a reliable value for that element of the liability including an implicit MOCE. In practice, such hedging is rarely perfect in all scenarios and there are some differences between the insurance cash flows and those of the replicating instrument which need to be valued separately. Where a model is used for this valuation, calibration of the model to the value of hedging instrument used is likely to assist in achieving overall consistency and reliability. Such practice should be encouraged by supervisors.

14.10 The valuation of technical provisions allows for the time value of money. The supervisor establishes criteria for the determination of appropriate rates to be used in the discounting of technical provisions.

14.10.1 The solvency regime allows for the time value of money to be recognised in the determination of technical provisions and should establish criteria for the determination of appropriate interest rates to be used in the discounting of technical provisions (discount rates). In developing these criteria, the supervisor should consider the following:

• the economics of the insurance obligations in its jurisdiction including their nature, structure and term; and

• the extent (if any) to which benefits are dependent on underlying assets.

14.10.2 The criteria for determining appropriate interest rates to be used in the discounting of technical provisions should recognise that the appropriate interest rates may not be directly observable and apply adjustments based on observable economic and market data of a general nature as appropriate.

14.10.3 To the extent that a risk is provided for elsewhere in the balance sheet by alternative means, there should be no allowance for that risk in the chosen discount rates.
14.10.4 As the discount rates should reflect the economics of the insurance obligations, any observed yield curve should be adjusted to account for differences between the economics of the observed instrument with those of the insurance obligations.

14.10.5 The criteria should also allow appropriate interpolation and extrapolation for non-observable market data and maturities. To provide for consistent, reliable, economic values, the criteria for discount rates should utilise the entire interest rate term structure.

14.10.6 In principle, if an investment has a reliable market value and fully replicates or hedges an element of the insurance obligations or risks, such a value is presumed to reflect the time value of money.

14.11 The supervisor requires the valuation of technical provisions to make appropriate allowance for embedded options and guarantees.

14.11.1 The determination of the current estimate and MOCE should make explicit allowance for any options of the policyholder or insurer and for guarantees embedded in the insurance contract, such as guaranteed minimum benefits and interest rate guarantees. The method used to value embedded options and guarantees should be appropriate to the nature, scale and complexity of risk and may include stochastic simulation or simplified methods as appropriate.

14.11.2 An important policyholder option is the option to lapse and, for some life products, to receive payment of a surrender value. Explicit allowance for lapses and surrenders should be incorporated in the projections of future cash flows that are used to determine technical provisions. The risks of lapse and surrender need to be considered over the full time horizon of the insurance contract. Historical experience of lapses and surrenders is decision useful in considering the setting of assumptions about future experience used for calculating a current estimate and MOCE. The uncertainty associated with lapses and surrender may not be fully diversifiable across insurance contracts as the level of lapses and surrenders may depend on economic conditions or perceptions about the performance of the insurer which apply generally to policyholders. This is offset by variations in policyholders’ responses to such conditions or perceptions and their personal motivation for lapse and surrender. Such factors should be taken into account when assessing the risk of lapse and surrender.

14.11.3 Technical provisions are not required to be subject to a surrender value floor equal to the total surrender values payable if all policies were to surrender immediately. Such an approach would not be an economic valuation as the effect of surrenders is already allowed for in the technical provisions by incorporating assumptions about the future rate of surrender and associated risks. However, in the determination of the overall financial requirements for solvency assessment purposes, a form of surrender value minimum may be considered appropriate, to provide additional protection in the event of a high level of surrenders. This should be reflected in regulatory capital requirements, as appropriate.
Investments

The supervisor establishes regulatory investment requirements for solvency purposes in order for insurers to make appropriate investments taking account of the risks they face.

Basis for establishing regulatory investment requirements

15.1 The supervisor establishes regulatory investment requirements on the investment activities of the insurer.

15.1.1 The nature of insurance business necessitates the investment in and holding of assets sufficient to cover technical provisions and capital requirements. The quality and characteristics of an insurer’s asset portfolio and the interdependence between the insurer’s assets and its liabilities are central to an assessment of an insurer’s solvency position, and therefore, are important aspects to be addressed by the supervisor and for an insurer to manage.

15.1.2 Quantitative requirements alone are not sufficient to ensure solvency, but should also be complemented with appropriate qualitative requirements on investment risk. Having both kinds of requirements helps to guard against the possibility that the regulatory capital requirements do not fully cover the risks inherent in those investment activities.

15.1.3 Factors to consider in establishing regulatory investment requirements may include:

- the overall quality of risk management practices and corporate governance frameworks of insurers;
- the comprehensiveness and transparency of disclosure frameworks in the jurisdiction and the ability for third parties to exercise sufficient scrutiny and market discipline;
- the development of relevant investment and capital markets locally and internationally and the range of available financial instruments;
- the cost of compliance, the impact on innovation and the effect on the efficiency of industry practices; and
- the level of prudence and risk-sensitivity of the regulatory solvency requirements and the risks that they cover.

15.1.4 Additionally, the supervisor should consider requirements applied in other, non-insurance, financial sectors when establishing regulatory investment requirements for insurers. It is important that requirements across financial sectors are as consistent as possible in order to discourage groups from taking advantage of regulatory arbitrage. Consistency of regulation between sectors may assist in maintaining a level playing field and enhancing fairness. However, such requirements should take into account the differences in risk profiles and risk management between sectors.
15.1.5 Openness and transparency of the regulatory investment requirements may help facilitate their effectiveness. The supervisor should be explicit as to the objectives of setting regulatory investment requirements. This is particularly important in order to ensure the consistency of such requirements with other building blocks of the regulatory solvency assessment of the insurer, such as the valuation of assets and liabilities, the calculation of regulatory capital requirements and the determination of available capital resources.

Rules-based and principles-based approaches

15.1.6 Regulatory investment requirements may take many forms and may influence the investment strategies of the insurer. Requirements may be rules-based, setting out specific rules or restrictions on the investment activities of the insurer, or principles-based, where there is no specific restriction on the asset strategy taken by the insurer, as long as defined principles are met.

15.1.7 Regulatory investment requirements may also be a combination of rules-based and principles-based, setting out some specific rules or restrictions and some principles with which the insurer’s investment strategy should comply.

15.1.8 Rules-based requirements may be used to prohibit or limit specific classes of investment. Such rules or restrictions may either be applied directly to the investments or lead to capital charges or deductions from available capital which act as a disincentive to investment in risky assets or high concentrations in particular assets, rather than as a prohibition.

15.1.9 Rules-based requirements may be relatively easy to enforce by supervisors, as there is limited scope for different interpretations of the rules. However, rules-based requirements may inhibit innovation in investment strategies and may restrain insurers from holding assets most appropriate for meeting their financial objectives. Rules-based requirements may also discourage insurers from fully developing their own risk management.

15.1.10 Principles-based requirements may provide more flexibility for the insurer to choose particular investments to best manage its investment risks. It may allow the insurer to follow an investment strategy that it believes is the most appropriate to its risk appetite and overall financial objectives. However, it may also be more difficult for the supervisor to determine the need to take supervisory measures as principles-based investment requirements allow some scope for differences in interpretation.

Group perspectives

15.1.11 In addition to meeting the qualitative and quantitative investment requirements at an insurance legal entity level, the insurance group should monitor investment risk exposures on an aggregate basis for the group as a whole.

15.1.12 For insurance groups, regulatory investment requirements may specify how investment exposures should be aggregated for the purposes of determining investment risk at a group level. Such requirements should provide for appropriate mitigation of risks associated with intra-group
transactions, for example, to limit contagion or reputational risk. Issues
to be considered may include exposures to related counterparties and
other interests over which the insurer has some influence (for example,
through a minority interest). In stress situations there will tend to be
greater restrictions on movements and realisation of investments across
the group. The regulatory investment regime may require contractual
evidence of the ability to access assets for solvency purposes before
allowing their inclusion for aggregation at the group level.

15.1.13 The regulatory investment requirements that apply at the insurance legal
entity and group levels, as well as the objectives of such requirements
should be explicit. Such requirements should include issues specific to
groups, such as requirements for liquidity, transferability of assets and
fungibility of capital within the group.

15.1.14 Regulatory investment requirements should be set having regard to the
possibility of losses from investments made by entities of an insurance
group weakening another entity or the group as a whole (for example, if
there is explicit or implicit support from another entity).

**Regulatory investment requirements regarding the asset portfolio**

15.2 The supervisor requires the insurer to invest assets so that, for its portfolio
as a whole:

- assets are sufficiently secure and are held in the appropriate
  location for their availability;

- payments to policyholders or creditors can be made as they fall
  due; and

- assets are adequately diversified.

**Security**

15.2.1 The insurer's investments should be sufficiently secure for the portfolio
as a whole, which is essential in ensuring obligations to policyholders
can be met. Regulatory investment requirements may restrict the
insurer’s selection of, or exposure to, investments that have low security
or whose security is difficult to assess reliably. There should be
appropriate measures in place to recognise and mitigate aggregations of
exposure across the insurer's portfolio, having particular regard to
concentrations of low security assets or those whose security is difficult
to assess reliably.

15.2.2 The security of an investment is related to the protection of its value and
can be affected by credit risk and market risks (including currency risk).
The security of an investment is also affected by safekeeping,
custodianship or trusteeship. Assets should be held in an appropriate
location so they are available to meet policyholder claims where
policyholder payments are made.

15.2.3 External credit ratings can assist the insurer in determining the credit risk
of an investment. However, the insurer should be aware of the limits of
using external credit ratings and conduct its own due diligence to assess
credit risk. The supervisor may establish requirements for the
appropriate use of external credit ratings. The supervisor may also
require the insurer to conduct a credit analysis independent of the
external credit rating, which may help in assessing the security of an investment.

15.2.4 To assess the security of its investments, it is important that the insurer is capable of assessing the nature, scale and complexity of the associated risks. This may be difficult in cases where there is a lack of transparency as to the underlying risk profile of an investment, such as indirect investments through a collective investment fund or for investments in complex financial instruments such as structured assets. Some markets may also suffer from a lack of transparency or clarity in terms of the applicable regulatory and legal systems and the degree of protection that they provide.

15.2.5 For assets lacking in transparency, the risk profile should be carefully analysed by the insurer. The insurer should look through to the underlying exposure of the investment as far as possible, considering the additional risks that are due to the investment structure. For example, additional legal risks may arise if investments are located outside of the insurer’s operating jurisdiction(s).

15.2.6 The insurer should evaluate the security of derivative products by taking into account the underlying exposures, as well as the security of the derivative counterparty, the purpose for which the derivative is held, and the cover (such as collateral) the insurer has for derivative exposures. In some cases, derivative counterparties may improve the security by giving the insurer the right to collateral if the counterparty fails. Similarly, the security of investments may be improved by guarantees from third parties.

15.2.7 When engaging in securities lending or repurchase agreements, an insurer should consider counterparty risk and reinvestment risk. The insurer should ensure the transactions are appropriately collateralised (with suitably frequent updating) and should recognise that these transactions do not mitigate the market or credit risk in the security, since the security is returned to the insurer at the end of the transaction. Care should be taken by the insurer when investing the collateral it holds to ensure that the transactions are covered even under adverse market conditions.

Security – group perspectives

15.2.8 The supervisor should consider the possibility that aggregation of exposures in an insurance group may result in heightened security issues which may be less important at the insurance legal entity level. The supervisor should closely monitor a group investing in assets that are not secure, and which could be distributed around the group to avoid investment restrictions.

CF 15.2.a. The group-wide supervisor requires the Head of the IAIG to ensure that the IAIG conducts its own due diligence to avoid placing undue reliance on assessments by credit rating agencies with regard to investment selection and risk management process.

CF 15.2.a.1 The IAIG should conduct due diligence to check the appropriateness of credit rating assessments, using various sources of information,
and should conduct its own credit assessments on its larger or more complex exposures.

CF 15.2.a.2 Undue reliance generally refers to unchallenged acceptance of the ratings provided by credit rating agencies.

**Liquidity**

15.2.9 The insurer should have assets that generate sufficient cash flows to pay policyholder claims when due, as well as all other obligations. The cash generated from investments includes disposals, maturity, and coupon or dividend payments.

15.2.10 The ability of the insurer to remain liquid may be adversely impacted for a variety of reasons. For example, the insurer:

- pledges or hypothecates its assets;
- experiences an unexpectedly large claim;
- experiences an event resulting in many claims;
- experiences significant shifts in market conditions; or
- has a derivative that needs to be serviced (for example, due to collateralisation or posting of margins).

15.2.11 The ability to realise or liquidate a sufficient amount of investments to meet policyholder claims, as well as all other obligations, at any point in time is important. For example, where an investment is made in a closed fund, a resale is usually not possible. This would impede the security of the investment in terms of its ability to settle obligations towards policyholders. Similar considerations would need to be given for property used by the insurer which might be hard to liquidate without an operational disruption.

**Liquidity – group perspectives**

15.2.12 The insurer and group-wide and other involved supervisors should consider the nature of the potential legal and practical impediments to cross-border transfer of assets as well as any potential effect those impediments might have, particularly in a resolution.

15.2.13 Group issues are relevant when managing liquidity risk, both in terms of the availability of additional liquidity and the possible need to provide liquidity support to other parts of the group.

15.2.14 Entities within a group frequently engage in intra-group transactions (eg swaps, inter-company loans) in order to manage risks that exist in different parts of the group or to have more mature businesses support growing businesses within the group. Such transactions should be done using appropriate transfer pricing based on current market conditions so that there is appropriate recognition of the impact of these transactions for each of the entities involved and the group as a whole.

15.2.15 Liquidity of assets and fungibility of capital are especially important if the group relies on diversification between entities without each entity being fully capitalised on a stand-alone basis (where allowed by the supervisor). The insurers should consider their liquidity needs,
transferability of assets and fungibility of their capital in a stressed environment when determining the minimum criteria for liquidity of their investment portfolio.

**CF 15.2.b** The group-wide supervisor requires the Head of the IAIG to consider the effect of potential legal and operational impediments to the IAIG’s ability to transfer capital and assets on a cross-border basis.

**CF 15.2.b.1** The Head of the IAIG should document specific restrictions that apply to the transfer of capital and assets from one jurisdiction to another, and what, if any, additional restrictions apply in the case of the resolution of a legal entity (see ICP 12 Exit from the Market and Resolution). The IAIG should have documented procedures on actions required for cross-border transfer of capital and assets in normal and stressed times.

### Diversification

15.2.16 Diversification and pooling of risks is central to the functioning of insurance business. To mitigate the risk of adverse financial events, it is important that the insurer’s overall investment portfolio is adequately diversified and that its asset and counterparty exposures are kept to prudent levels.

15.2.17 There is a distinction between diversification within a risk category and diversification between risk categories. Diversification within a risk category occurs where risks of the same type are pooled (eg shares relating to different companies). Diversification between risk categories is achieved through pooling different types of risk. For example, where the insurer combines two asset portfolios whose performances are not fully correlated, the exposure to the aggregated risks will generally be lower than the sum of the exposures to the risks in the individual portfolios.

15.2.18 With respect to its investment portfolio, the insurer should ensure that it is diversified within and between risk categories, taking into account the nature of the liabilities. Diversification between investment risk categories could, for example, be achieved through spreading the investments across different classes of assets and different markets. For diversification within a risk category, the investments are sufficiently uncorrelated so that – through pooling of individual assets – there is a sufficient degree of diversification of the portfolio as a whole.

15.2.19 To ensure that its investment portfolio is adequately diversified, the insurer should avoid overreliance on, for example, any specific asset type, issuer, counterparty, group, or market and any excessive concentration or accumulation of risk in the portfolio as a whole. The insurer may also consider its asset concentration by type of investment product, by geographical dispersion or by credit rating. Additionally the insurer may consider its aggregate exposure to related entities (such as joint ventures) and different types of exposure to the same entity or group (such as equity investment in a reinsurer which is also providing its reinsurance cover).
Diversification – group perspectives

15.2.20 Having risk management processes to monitor investments on a group-wide basis is more likely to make Senior Management aware of issues (e.g., asset concentrations) that could be overlooked if only the individual legal entities are monitored. Groups that are unaware of their global exposures could face an inappropriate level of exposure to certain investments, which may create financial difficulties within the group if the value or liquidity of these investments decreases.

Group perspectives

15.2.21 The assets of an entity within an insurance group may include participations or investments in another entity within the same group. Appropriate investment requirements should apply to such investments or participations, particularly due to liquidity concerns. Relatively small holdings in another legal entity, within the same insurance group that does not give the investor control over the issuer may, for example, be subject to the same requirements that apply to investments in entities external to the group. On the other hand, for larger holdings which give the investor control or significant influence over the issuer, consideration should be given to aggregating the assets of the issuer with those of the investor for the purposes of applying investment requirements. This is done so that adequate security, liquidity, and diversification are maintained and that the investor, using its control over the issuer, ensures the issuer’s investment activities are consistent with its own investment policy.

Regulatory investment requirements relating to the nature of the liabilities

15.3 The supervisor requires the insurer to invest in a manner that is appropriate to the nature and duration of its liabilities.

15.3.1 Assets that are held to cover policyholder liabilities and those covering regulatory capital requirements should be invested in a manner which is appropriate to the nature of the liabilities, as the insurer needs to use the proceeds of its investments to make payments to policyholders and other creditors when due. The insurer’s investment strategies should take into account the extent to which the cash flows from investments match the liability cash flows in terms of timing, amount and currency, and how this changes in varying conditions. In this context, the insurer should specifically consider investment guarantees and embedded options that are contained in its insurance policies.

15.3.2 Insurers are not necessarily required to employ an investment strategy which matches the assets and the liabilities as closely as possible. However, to the extent that assets and liabilities are not well matched, movements in financial variables (e.g., interest rates, market values and exchange rates) may affect the value of the assets and the liabilities differently and result in an adverse economic impact for the insurer.

15.3.3 As liability cash flows are often uncertain, or there are not always assets with appropriate cash flow characteristics, the insurer is usually not able to adopt a completely matched position. Additionally, the insurer may wish to adopt a mismatched position deliberately in an attempt to optimise the return on its business. In such circumstances, the
supervisor may require the insurer to hold additional technical provisions and/or capital to cover the mismatching risk. The regulatory investment requirements may also constrain an insurer’s ability to mismatch its assets and liabilities as the extent of mismatching should not expose policyholders to risks that cannot be effectively managed by the insurer.

15.3.4 Nevertheless, close matching of assets and liabilities is often possible and should be considered as a potential requirement in the case of unit-linked or universal life policies where there is a direct link between policyholder benefits and investment funds or indices. It may not be possible for the mismatching risk to be covered effectively by capital. Where the supervisor requires assets to be closely matched to such liabilities, other restrictions on investments may be appropriate to contain the investment fund risk being borne directly by policyholders.

15.3.5 The insurer should manage conflicts of interest (eg between the insurer’s corporate objectives and disclosed insurance policy objectives) to ensure assets are invested appropriately. For example, for with-profits liabilities, an insurer should invest appropriately to meet policyholders’ reasonable expectations.

Group Perspectives

15.3.6 Investments that back liabilities including those covering regulatory capital requirements within one of a group’s insurance legal entities should be tailored to the characteristics of the liabilities and the needs of the insurance legal entity and not be subject to undue influence from the wider objectives of the group.

Regulatory investment requirements regarding risk assessability

15.4 The supervisor requires the insurer to invest only in assets where it can properly assess and manage the risks.

15.4.1 The insurer should have sufficient information about its investments, including those in collective investment funds, to ensure that its asset risks can be properly managed.

15.4.2 The insurer should understand the risks involved, and determine how material the risk from a proposed investment is, before undertaking any investments. Assessment of risks should take into account the maximum possible loss, including losses that may occur in situations where assets, such as derivatives, become liabilities for the insurer.

15.4.3 Where the insurer is able to look through the structure of the investments to the underlying assets, the insurer should consider the risk characteristics of the underlying assets and how this affects the risk characteristics of the investments itself. However, where such a look through is not possible, appropriate techniques should be developed to assess the risks associated with the investment including assessing the investment manager of an investment fund.

15.4.4 Investments that are not traded on a regulated financial market should be kept to prudent levels, as an objective assessment of the risks is likely to be difficult and costly. This is particularly relevant in jurisdictions where standardised approaches to determining regulatory capital requirements are used, since such approaches will often be designed to be not unduly
complex and thus feasible in practice for all insurers. Moreover, by its very nature a standardised approach may not be able to fully and appropriately reflect the risk profile of the investment portfolio of each individual insurer.

15.4.5 The insurer should have access to the requisite knowledge and skills to assess and manage the risks of its investments. When an external investment advisor or manager is used, the insurer should retain adequate investment expertise in-house, as it has the ultimate responsibility for its investments.

**Group Perspectives**

15.4.6 Investments held by entities within a group are sometimes managed centrally by an investment management function, with the entities relying on its expertise. In such arrangements, the investment management function should have the requisite knowledge and skills to assess and manage the risks of these investments and manage the investments with due regard to the needs of individual entities in addition to the group as a whole.

**Regulatory investment requirements relating to specific financial instruments**

15.5 The supervisor establishes quantitative and qualitative requirements, where appropriate, on:

- the use of more complex and less transparent classes of assets; and
- investments in markets or instruments that are subject to less governance or regulation.

15.5.1 Complex investments may have a higher risk of large, sudden or unexpected losses due to the nature of the underlying risks and volatilities. Similarly, there are some assets in which investment is permitted by the regulatory investment regime (because the risk is generally sufficiently assessable), but are less transparent compared to other investments. Other assets could be less well governed in terms of the systems and controls in place for managing them or the market regulation that applies to them. Such assets may present operational risks, particularly in adverse conditions that are difficult to assess reliably. In terms of market regulation, investments in an unregulated market or a market that is subject to less regulation (such as the Professional Securities Market of the London Stock Exchange) need to be given special consideration.

15.5.2 The supervisor should therefore establish quantitative or qualitative requirements or restrictions on such investments, as necessary. For example, regulatory investment requirements may include the pre-approval of an insurer’s derivative use plan, whereby the insurer has to describe its controls over and testing of the derivative investment process before it is used in a live environment.

15.5.3 The investments described below are examples of investments that may necessitate quantitative and qualitative requirements; however, this is not an exhaustive list and regulatory investment requirements should be flexible and/or sufficiently broad to take account of the changing
environment. The solvency position and the sophistication of an insurer should also be considered. The amount of available capital an insurer has could provide additional flexibility to the supervisor in particular cases.

**Off-balance sheet structures**

15.5.4 When deciding whether to invest in off-balance sheet structures, the insurer should take into account their unique characteristics and risk exposures. For example, special purpose entities (SPEs) (see ICP 13 Reinsurance and Other Forms of Risk Transfer) are generally more complex than other forms of investments.

15.5.5 An investment strategy that uses an off-balance sheet structure may have an impact on the ability of the insurer to pay policyholder claims and all other obligations, especially under stressed circumstances.

**Investments in structured credit products**

15.5.6 An insurer may invest in securities or other financial instruments which have been packaged by an SPE and which may originate from other financial institutions (including banks or other insurers). Examples of such instruments are asset backed securities (ABS), credit linked notes (CLN) or insurance linked securities (ILS). In these cases, it may be very difficult for the insurer to assess the risk inherent in the investment, and in particular the risk profile of the underlying reference instruments, which in some cases may be of particularly poor quality (e.g. sub-prime mortgages). Where the originator is another insurer, the investment may also carry insurance related risks (such as non-life catastrophe risks in the case of a non-life catastrophe bond securitisation) which may not be transparent to the insurer or else difficult to assess.

15.5.7 If the supervisor is concerned that the insurer is exposed to an undue level of risk in such cases, it may consider establishing qualitative or quantitative requirements which may relate directly to the insurer investing in such assets, or which may relate to the originator of the packaged instrument.

15.5.8 In establishing such requirements, the supervisor may recognise that some structured credit products are higher risk than others and consider, for example:

- the treatment of such investment in other financial sectors;
- the extent to which the originator has retained an interest in a proportion of the risk being distributed to the market;
- the definition and soundness of criteria applied by the originator in extending the original credit and in diversifying its credit portfolio;
- the transparency of the underlying instruments; and
- the procedures the insurer has in place to monitor exposures to securitisations, including consideration of securitisation tranches, and reporting them to the insurer's Board and Senior Management and supervisor.
15.5.9 Restrictions or prohibitions may be applied to investments in structured products where appropriate conditions are not satisfied.

*Use of derivatives and similar commitments*

15.5.10 An insurer choosing to engage in derivative activities should clearly define its objectives, ensuring that these are consistent with any supervisory requirements.

15.5.11 When used appropriately, derivatives may be useful tools in the management of portfolio risk of insurers and in efficient portfolio management. In monitoring the activities of insurers involved in derivatives, the supervisor should satisfy itself that the insurer has the ability to recognise, measure and prudently manage the risks associated with their use. The supervisor should obtain sufficient information on the insurer’s policies and processes on the use of derivatives and may request information on the purpose for which particular derivatives are to be used and the rationale for undertaking particular transactions.

15.5.12 Given the nature of insurance operations, derivatives should preferably be used as a risk management mechanism rather than for speculation. The supervisor may restrict the use of derivatives (particularly derivatives that involve the possibility of unlimited loss) to the reduction of investment risk or efficient portfolio management. This means that where derivatives are used, it is for the purpose of reducing risk and costs or generating additional capital or income with an acceptable level of risk. Restrictions may also be applied to require the suitability of derivative counterparties, the derivative collateral, the tradability of the derivative and, in the case of over-the-counter derivatives, the ability to value and to close out the position when needed. Derivatives should be considered in the context of a prudent overall asset-liability management strategy.
**ICP 16 Enterprise Risk Management for Solvency Purposes**

The supervisor requires the insurer to establish within its risk management system an enterprise risk management (ERM) framework for solvency purposes to identify, measure, report and manage the insurer's risks in an ongoing and integrated manner.

**Introductory Guidance**

16.0.1 ERM for solvency purposes is the coordination of risk management, strategic planning, capital adequacy, and financial efficiency in order to enhance sound operation of the insurer and ensure the adequate protection of policyholders. Capital adequacy measures the insurer's assessment of residual risk of its business, after overlaying the mitigating financial effect of the insurer's established risk management system. Any decision affecting risk management, strategic planning or capital would likely necessitate a compensating change in one or both of the other two. Successful implementation of ERM for solvency purposes results in enhanced insight into an insurer's risk profile and solvency position that promotes an insurer's risk culture, earnings stability, sustained profitability, and long-term viability, as well as the insurer's ability to meet obligations to policyholders. Collectively practiced in the industry, ERM for solvency purposes supports the operation and financial condition of the insurance sector. These aspects of ERM should therefore be encouraged from a prudential standpoint.

16.0.2 The ERM framework for solvency purposes (ERM framework) is an integrated set of strategies, policies and processes, established by the insurer for an effective implementation of ERM for solvency purposes.

16.0.3 Components of the ERM framework that are covered in this ICP:

- Risk identification (including group risk and relationship between risks);
- Quantitative techniques to measure risk;
- Inter-relationship of risk appetite, risk limits and capital adequacy;
- Risk appetite statement;
- Asset-liability management, investment, underwriting and liquidity risk management policies;
- Own risk and solvency assessment (ORSA); and
- Recovery planning.

16.0.4 The ERM framework should be integrated within the insurer’s risk management system (see ICP 8 Risk Management and Internal Controls).

16.0.5 The ERM framework should enhance an insurer’s understanding of material risk types, their characteristics, interdependencies, and the
sources of the risks, as well as their potential aggregated financial impact on the business for a holistic view of risk at enterprise level. Senior Management should exhibit an understanding of the insurer’s enterprise risk issues and show a willingness and ability to address those issues. A fundamental aspect of ERM is the development and execution of a consistent, transparent, deliberate, and systematic approach to manage risks, both individually and in aggregate, on an ongoing basis to maintain solvency and operation within the risk appetite and risk limits. ERM should be embedded in an insurer’s corporate culture to ensure that the whole organisation contributes to risk awareness, feedback loops and coordinated responses to risk management needs.

16.0.6 The objective of ERM is not to eliminate risk. Rather, it is to manage risks within a framework that includes self-imposed limits. In setting limits for risk, the insurer should consider its solvency position and its risk appetite. Risk limits should be set after careful consideration of strategic objectives, business plans and circumstances and should take into account the projected outcomes of scenarios run using a range of plausible future business assumptions which reflect sufficiently adverse scenarios. A risk limits structure is used to establish guardrails on an insurer’s risk profile to optimise its returns without endangering the ability of the insurer to meet its commitments to policyholders.

16.0.7 Some insurers may utilise internal models as part of their ERM process in order to generate sophisticated risk metrics to inform management actions and capital needs. Internal models may enhance risk management and embed risk culture in the insurer. They may provide a common measurement basis across all risks (eg same methodology, time horizon, risk measure, level of confidence) and strengthened risk-based strategic decision-making across the organisation. Such an approach typically adopts a total balance sheet approach whereby the impact of the totality of material risks is fully recognised on an economic basis. A total balance sheet approach reflects the interdependence between assets, liabilities, capital requirements and capital resources, and identifies the capital allocation sufficient to protect the insurer and its policyholders, as well as to improve capital efficiency.

16.0.8 The insurer should have adequate governance and internal controls in place for models used in the ERM framework. The calculation of risk metrics should be transparent, supportable, and repeatable.

16.0.9 An insurer should have contingency plans that describe in advance the necessary actions and resources to limit business disruption and losses resulting from an adverse financial event (such as risk exposures exceeding risk limits), or an operational event (such as a natural disaster). Contingency planning may include a recovery plan, when deemed necessary.

**Enterprise risk management framework - risk identification**

16.1 The supervisor requires the insurer’s ERM framework to provide for the identification of all reasonably foreseeable and relevant material risks and risk interdependencies for risk and capital management.

**Risk identification**
16.1.1 The scope of risk identification and analysis of risk interdependencies should cover, at least: insurance risk, market risk, credit risk, concentration risk, operational risk and liquidity risk. Other risks may be included, such as conduct risk, legal risk, political risk, reputational risk, strategic risk and group risk.

Sources of risk and the relationship between risks

16.1.2 An insurer should consider the sources of different risks and their impacts and assess the relationship between risk exposures. By doing so, an insurer can better identify both strengths and weaknesses in governance, control functions and business units. The insurer should use and improve risk management policies, techniques and practices and change its organisational structure to make these improvements where necessary. The insurer should also assess external risk factors which, if they were to crystallise, could pose a significant threat to its business.

16.1.3 In assessing the relationship between risk exposures, consideration should be given to correlations between the tails of risk profiles. For example, risks that show no strong dependence under normal economic conditions (such as catastrophe risks and market risks) could be more correlated in a stress situation.

16.1.4 Assessments of risk exposures should consider macroeconomic exposures. For example, an insurer should consider interdependencies between guarantees and options embedded in its products, the assets backing those products, financial markets and the real economy.

16.1.5 Sources of risks may include catastrophes, downgrades from rating agencies or other events that may have an adverse impact on the insurer’s financial condition and reputation. These events can result, for example, in an unexpected level of claims, collateral calls or policyholder terminations and may lead to serious liquidity issues. The ERM framework should adequately address the insurer’s options for responding to such events.

Group risk

16.1.6 Group risk is the risk that the financial condition of a group or a legal entity within the group may be adversely affected by a group-wide event, an event in a legal entity, or an event external to the group. Such an event may either be financial or non-financial (such as a restructuring).

16.1.7 Group risk may arise, for example, through contagion, leveraging, double or multiple gearing, concentrations, large exposures and complexity. Participations, loans, guarantees, risk transfers, liquidity, outsourcing arrangements and off-balance sheet exposures may all give rise to group risk. Many of these risks may be borne by stand-alone insurance legal entities and are not specific to being a legal entity that is part of a group. However, the inter-relationships among legal entities within a group including aspects of control, influence and interdependence alter the impact of risks on the legal entities and should therefore be taken into account in managing the risks of an insurance legal entity within the insurance group and in managing the risks of that insurance group as a whole.
Group perspectives

16.1.8 The ERM framework of an insurance group should address the direct and indirect interrelationships between legal entities within the insurance group. The more clearly-defined and understood such relationships are, the more accurately they can be allowed for in the group-wide solvency assessment. For example, legally enforceable capital and risk transfer instruments between legal entities within a group may help with the effectiveness of its ERM framework for group-wide solvency assessment purposes. To be effective, the management of insurance group risk should take into account risks arising from all parts of an insurance group, including non-insurance legal entities (regulated or unregulated) and partly-owned entities.

16.1.9 Assumptions that are implicit in the solvency assessment of an insurance legal entity may not apply at an insurance group level because of separation of legal entities within the insurance group. For example, there may be few, if any, constraints on the fungibility of capital and the transferability of assets within an individual insurance legal entity. However, such constraints may feature much more prominently for an insurance group and may restrict the degree to which benefits of diversification of risks across the group can be shared among legal entities within the insurance group. Such constraints should be taken into account in both the insurance group’s and the insurance legal entity’s ERM frameworks.

CF 16.1.a The group-wide supervisor requires:

- the group-wide ERM framework to be as consistent as possible across its legal entities; and
- material differences in the group-wide ERM framework to be transparent and explicitly linked to legal and supervisory requirements in the jurisdictions where the IAIG operates, and the risks associated with business conducted in those jurisdictions.

CF 16.1.b The group-wide supervisor requires the group-wide ERM framework to include strategies, policies, and processes to manage effectively at least the following risks and to address these risks in a cross-border context:

- insurance risk;
- market risk;
- credit risk;
- liquidity risk;
- concentration risk;
- operational risk;
- group risk; and
- strategic risk.

CF 16.1.b.1 While these risks should be recognised and managed in the group-wide ERM framework, each risk category does not have to be
managed separately. Some risk types, such as strategic or concentration risk, may be included in other risk categories.

CF 16.1.c The group-wide supervisor requires the group-wide ERM framework to take into account intra-group transactions (IGT) including:

- the mechanisms to keep track of intra-group transactions that are of substantial importance to, and have a significant consequence for, the IAIG;
- the risks arising from intra-group transactions; and
- the qualitative and quantitative restrictions on such risks.

CF 16.1.c.1 Intra-group transactions may include:

- loans;
- guarantees;
- issuance of contingent capital;
- payment of dividends;
- cost sharing structures;
- service contracts;
- management arrangements and outsourcing;
- reinsurance;
- transactions across different financial services entities within the IAIG; and
- equity holdings.

CF 16.1.c.2 On a consolidated basis, or other aggregated basis, the risks to the IAIG arising from IGT may not be evident. The IAIG’s risk assessment of its IGT should consider, among other factors:

- fungibility of capital and transferability of assets (such as capital or equity injections from one legal entity into another);
- currency effects such as if there are cost sharing or service contracts between legal entities located in different jurisdictions;
- correlation or concentration of risk;
- practical issues, including the time needed to reallocate risk and risk mitigants among legal entities; and
- contagion risk within the group.

CF 16.1.c.3 The IAIG should take account of, the risk of support being withdrawn from one part of the IAIG to another due to adverse publicity, poor results, operational inefficiencies, or supervisory measures.

CF 16.1.c.4 The group-wide ERM framework should address any financial or other activities (eg maturity transformation, securities lending) being undertaken by individual legal entities that may change the risk profile.
of the group. For example, in securities lending transactions, the group-wide ERM framework may provide that high quality assets not be swapped with low quality assets, that appropriate arrangements for the provisioning of collateral are in place, or that the maturity of the swapped assets does not significantly alter the risk profile of the IAIG.

Enterprise risk management framework – quantitative techniques to measure risk

16.2 The supervisor requires the insurer’s ERM framework to:

- provide for the quantification of risk and risk interdependencies under a sufficiently wide range of techniques for risk and capital management; and
- as necessary, include the performance of stress testing to assess the resilience of its total balance sheet against macroeconomic stresses.

Measuring, analysing and modelling the level of risk

16.2.1 The level of risk is a combination of the impact that the risk will have on the insurer and the probability of that risk materialising. The insurer should assess regularly the level of risk it bears by using appropriate forward-looking quantitative techniques (such as risk modelling, stress testing, including reverse stress testing, and scenario analysis). An appropriate range of adverse circumstances and events should be considered, including those that pose a significant threat to the financial condition of the insurer, and management actions should be identified together with the appropriate timing of those actions. Risk measurement techniques may also be used in developing long-term business and contingency plans.

16.2.2 Different approaches to measuring risk may be appropriate depending on the nature, scale and complexity of a risk and the availability of reliable data on the behaviour of that risk. For example, a low frequency but high impact risk where there is limited data (such as catastrophe risk) may require a different approach from a high frequency, low impact risk for which there is substantial amounts of experience data available. Stochastic risk modelling may be appropriate to measure some risks (such as non-life catastrophe), whereas relatively simple calculations may be appropriate in other circumstances.

16.2.3 The measurement of risks should be based on a consistent economic assessment of the total balance sheet as appropriate to ensure that appropriate risk management actions are taken. In principle, an insurer’s ERM framework should take into consideration the distribution of future cash flows to measure the level of risks. The insurer should be careful not to base decisions purely on accounting or regulatory measures that involve non-economic considerations and conventions although the constraints on cash flows that they represent should be taken into account.

Group perspectives

16.2.4 An insurance group should clarify whether data used in risk assessments is based on a consolidated, aggregated or other method. The insurance group should take into account the implications and
inherent risks of the selected methodology when developing its ERM framework. For example, intra-group transactions may be eliminated in consolidation and thus may not be reflected in the consolidated financial statement of the insurance group at the top level. In using the consolidation basis for the ERM framework, the insurance group may be able to account, and take credit, for diversification of risk. Conversely, using another aggregation method may facilitate a more granular recognition of risk.

Use of models for ERM

16.2.5 Measurement of risks undertaken at different valuation dates should be produced on a broadly consistent basis overall, which may make variations in results easier to explain. Such analysis also aids the insurer in prioritising its risk management.

16.2.6 Regardless of how sophisticated they are, models cannot exactly replicate the real world. Risks associated with the use of models (modelling and parameter risk), if not explicitly quantified, should be acknowledged and understood as the insurer implements its ERM framework, including by the insurer’s Board and Senior Management.

16.2.7 Models may be external or internal. External models may be used to assess catastrophes or market risks. Internal models may be developed by an insurer to assess specific material risks or to assess its risks overall.

16.2.8 Internal models can play an important role in facilitating the risk management process and the supervisor should encourage insurers to make use of such models for parts or all of their business, where it is appropriate.

16.2.9 An insurer may consider that the assessment of current financial resources and the calculation of regulatory capital requirements would be better achieved through the use of internal models, where permitted.

16.2.10 If used, an internal model may provide an important strategic and operational decision-making tool and should be used to enable the insurer to integrate its risk and capital management processes. In particular, the internal model used for ORSA should be consistent with models for other processes within the ERM framework. These include: assessment of the risks faced within the insurer’s business; construction of risk limits structure; and the determination of the economic capital needed, where appropriate, to meet those risks.

16.2.11 To be effective, an internal model should address all the identified risks within its scope, and their interdependencies, and assess their potential impact on the insurer’s business given the possible situations that could occur. The methods by which this analysis could be conducted range from simple stress testing of events to more complex stochastic modelling, as appropriate.

16.2.12 The insurer’s internal model should be calibrated on the basis of defined modelling criteria that the insurer believes will determine the level of capital appropriate and sufficient to meet its business plan and strategic objectives. These modelling criteria may include the basis for valuation of the assets and liabilities, the confidence level, risk measure and time
horizon, as well as other business objectives (for example, aiming to achieve a certain minimum investment rating).

16.2.13 In constructing its internal model, an insurer should adopt risk modelling techniques and approaches that are appropriate to its risk strategy and business plans. An insurer may consider various inputs to the modelling process, such as economic scenarios, asset portfolios and liabilities from in-force or past business, and regulatory constraints on the transfer of assets.

16.2.14 An internal model used to determine economic capital may enable the insurer to allocate sufficient financial resources to ensure it continues to meet its policyholder liabilities as they fall due, at a confidence level appropriate to its business objectives. To fully assess policyholder liabilities in this way, all liabilities that should be met to avoid putting policyholder interests at risk need to be considered, including any liabilities for which a default in payment could trigger the winding up of the insurer.

16.2.15 If an insurer uses its own internal model as part of its risk and capital management processes, the insurer should validate it and review it on a regular basis. Validation should be carried out by suitably experienced individuals in a different department or persons other than those who created the internal model, in order to facilitate independence. The insurer may wish to consider an external review of its internal model by appropriate specialists; for example, if the internal review cannot be performed with sufficient independence, an external review may be warranted.

16.2.16 Where a risk is not readily quantifiable (for instance some operational risks or where there is an impact on the insurer’s reputation), the insurer should make a qualitative assessment that is appropriate to that risk and sufficiently detailed to be useful for risk management. The insurer should analyse the controls needed to manage such risks to ensure that its risk assessments are reliable and consider events that may result in high operational costs or operational failure. Such analysis should inform the insurer’s judgments in assessing the size of the risks and enhancing overall risk management.

16.2.17 It may be appropriate for internal models to be used for a group even where the use of an internal model is not an approach appropriate at the insurance legal entity level due to, for example, lack of sufficient data.

| CF 16.2.a | The group-wide supervisor requires the Head of the IAIG to ensure that the IAIG measures all reasonably foreseeable, quantifiable, and relevant material risks using an economic capital model taking into account the risks that the IAIG faces in different sectors, jurisdictions and economic environments. |
| CF 16.2.a.1 | The IAIG should prioritise its risks in a consistent and reliable manner using appropriate means, including the use of an economic capital model. |
| CF 16.2.a.2 | The economic capital model should be based on techniques that estimate the amount of capital needed in reasonably foreseeable adverse situations to which the IAIG is or may be exposed. |
The economic capital model, in conjunction with other relevant capital measures (for example, regulatory capital requirements), should support major management decisions by focusing attention on capital adequacy.

**CF 16.2.a.3** The IAIG should consider the output of its economic capital model and regulatory capital requirements as inputs to its capital planning, which covers at least the IAIG’s business planning period.

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**Stress testing, scenario analysis and reverse stress testing**

16.2.18 Stress testing measures the financial impact of stressing one or more factors which could severely affect the insurer. Scenario analysis considers the impact of a combination of circumstances to reflect historical or other scenarios which are analysed in the light of current conditions. Scenario analysis may be conducted deterministically using a range of specified scenarios or stochastically, using models to simulate many possible scenarios, to derive statistical distributions of the results.

16.2.19 Stress testing and scenario analysis should be carried out by the insurer to validate and understand the limitations of its models. They may also be used to complement the use of models for risks that are difficult to model or where the use of a model may not be appropriate from a cost-benefit perspective. For example, these techniques can be used to investigate the effect of proposed management actions.

16.2.20 Scenario analysis may be particularly useful as an aid to communicate risk management issues to the Board, Senior Management, business units and control functions. As such, scenario analysis can facilitate the integration of the insurer’s ERM framework within its business operations and establish a sound risk culture.

16.2.21 Reverse stress testing may help identify scenarios that could result in failure or cause the financial position of an insurer to fall below a predefined level. While some risk of failure is always present, such an approach may help to ensure adequate focus on the management actions that are appropriate to avoid undue risk of business failure. The focus of such reverse stress testing is on appropriate risk management actions rather than the assessment of its financial condition and so may be largely qualitative in nature although broad assessment of associated financial impacts may help in deciding the appropriate action to take.

16.2.22 Stress testing is intended to serve the insurer as an aid to sound risk management, including by identifying residual macroeconomic exposure.

16.2.23 Macroeconomic exposure in the insurance sector can accumulate through certain types of insurance liabilities or may be created through non-insurance activities. Examples are:

- savings-oriented products (or protection-oriented products with a savings component) that offer unmatched guarantees on policyholders’ premium payments, often combined with embedded options for policyholders;
• products embedding features such as automatic asset sales triggered by asset value decreases or that require dynamic hedging; and
• derivatives contracts such as financial guarantee products including credit default swaps (CDS) that are not used to hedge risk.

16.2.24 In deciding whether it is necessary to require stress testing, and the frequency, scope and type of such stress testing, the supervisor should take into account, for example:

• the nature, scale and complexity of: the insurer, its activities, business model and products, including the characteristics of the guarantees it provides;
• the characteristics of any automatic asset reallocation mechanisms;
• the use of dynamic hedging and the extent to which such guarantees are matched or hedged; and
• its activity in derivatives markets.

Group perspectives

16.2.25 The risks identified and the techniques that are appropriate and adequate for measuring them (including stress testing, scenario analysis, risk modelling and reverse stress testing) may differ at insurance group and insurance legal entity level. Where an insurance legal entity’s ERM framework is an integral part of the insurance group’s ERM framework, the techniques used to measure risks at group level should consider those that are appropriate and adequate at the insurance legal entity level.

| CF 16.2.b | The group-wide supervisor requires the IAIG’s risk measurement to include:
| | • stress and reverse stress testing and scenario analysis the IAIG deems relevant to its risk profile; and
| | • the resilience of its total balance sheet against macroeconomic stresses.

CF 16.2.b.1 Stresses should include (but may not be limited to) those in the risk transfer markets that may have an adverse effect on the IAIG’s risk profile. For example, when developing its scenarios for stress testing, the IAIG should consider reinsurance capacity and related risk transfer costs in future periods after a catastrophic event.

CF 16.2.b.2 The IAIG’s assessment of macroeconomic stresses should pay particular attention to the impact of stresses on the value of guarantees and options embedded in insurance products and on the assets backing them.

| CF 16.2.c | The group-wide supervisor requires the group-wide ERM framework to be independently reviewed at least once every three years, in order to ascertain that it remains fit for purpose. |
CF 16.2.c.1 The group-wide ERM framework review may be carried out by an internal or external body as long as the reviewer is independent and not responsible for, nor been actively involved in, the part of the group-wide ERM framework that it reviews.

CF 16.2.c.2 It may be necessary for the IAIG to perform an ad hoc review after a major change has occurred, such as a change in its risk profile, structure or business strategy.

Enterprise risk management framework - Inter-relationship of risk appetite, risk limits and capital adequacy

16.3 The supervisor requires the insurer’s ERM framework to reflect the relationship between the insurer’s risk appetite, risk limits, regulatory capital requirements, economic capital and the processes and methods for monitoring risk.

16.3.1 An insurer’s ERM framework should reflect how its risk management coordinates with strategic planning and its management of capital (regulatory capital requirement and economic capital).

16.3.2 As an integral part of its ERM framework, an insurer should also reflect how its risk management links with corporate objectives, strategy and current circumstances to maintain capital adequacy and solvency and to operate within the risk appetite and risk limits described in the risk appetite statement.

16.3.3 An insurer’s ERM framework should use reasonably long time horizon, consistent with the nature of the insurer’s risks and the business planning horizon, so that it maintains relevance to the insurer’s business going forward. This can be done by using methods (such as scenario models) that produce a range of outcomes based on plausible future business assumptions which reflect sufficiently adverse scenarios. The analysis of these outcomes may help the Board and Senior Management in strategic business planning.

16.3.4 Risks should be monitored and reported to the Board and Senior Management, in a regular and timely manner, so that they are fully aware of the insurer’s risk profile and how it is evolving and make effective decisions on risk appetite and capital management.

16.3.5 Where internal models are used for business forecasting, the insurer should perform back-testing, to the extent practicable, to validate the accuracy of the model over time.

16.3.6 The insurer’s ERM framework should note the insurer’s reinsurance arrangements and how they:

- reflect the insurer’s risk limits structure;
- play a role in mitigating risk; and
- impact the insurer’s capital requirements.

The use of any non-traditional forms of reinsurance (eg finite reinsurance) should also be addressed.

Enterprise risk management framework - risk appetite statement
16.4 The supervisor requires the insurer to have a risk appetite statement that:

- articulates the aggregate level and types of risk the insurer is willing to assume within its risk capacity to achieve its financial and strategic objectives, and business plan;

- takes into account all relevant and material categories of risk and their interdependencies within the insurer’s current and target risk profiles; and

- is operationalised in its business strategy and day-to-day operations through a more granular risk limits structure.

16.4.1 An insurer’s risk appetite statement should include qualitative statements as well as quantitative measures expressed relative to earnings, capital, risk measures, liquidity and other relevant measures as appropriate.

16.4.2 Qualitative statements should:

- complement quantitative measures;

- set the overall tone for the insurer’s approach to risk taking; and

- articulate clearly the motivations for taking on or avoiding certain types of risks, products, jurisdictional/regional exposures, or other categories.

16.4.3 Risk appetite may not necessarily be expressed in a single document. However the way it is expressed should provide the insurer’s Board with a coherent and holistic, yet concise and easily understood, view of the insurer’s risk appetite.

16.4.4 The supervisor should require risk capacity of the insurer to include the consideration of regulatory capital requirements, economic capital, liquidity and operational environment.

16.4.5 The risk appetite statement should give clear guidance to operational management on the level of risk to which the insurer is prepared to be exposed and the limits of risk to which they are able to expose the insurer. It should also be communicated across and within the insurer to facilitate entrenching the risk appetite into the insurer’s risk culture.

16.4.6 An insurer should consider how to embed these limits in its ongoing operations. This may be achieved by expressing limits in a way that can be measured and monitored as part of ongoing operations. Stress testing may provide an insurer with a tool to help ascertain whether the limits are suitable for its business.

Group perspectives

16.4.7 An insurance legal entity’s risk appetite statement should define risk limits taking into account all of the group risks it faces to the extent that they are relevant and material to the insurance legal entity.

16.4.8 When creating a risk limits structure at the insurance legal entity level, the entity’s Board and Senior Management should take into account risk limits at the group level.
The group-wide supervisor requires the group-wide ERM framework to establish and maintain processes to communicate its risk appetite internally and externally.

The granularity of disclosure may differ between internal and external communication.

Asset-liability management, investment, underwriting and liquidity risk management policies

The supervisor requires the insurer’s ERM framework to include an explicit asset-liability management (ALM) policy which specifies the nature, role and extent of ALM activities and their relationship with product development, pricing functions and investment management.

As appropriate, the ALM policy should set out how:

- the investment and liability strategies allow for the interaction between assets and liabilities;
- the liability cash flows will be met by the cash inflows; and
- the economic valuation of assets and liabilities will change under a range of different scenarios.

ALM does not imply that assets should be matched as closely as possible to liabilities, but rather that mismatches are effectively managed. Not all ALM needs to use complex techniques. For example, simple, low risk or short term business may call for less complex ALM techniques.

The insurer’s ALM policy should recognise the interdependence between all of the insurer’s assets and liabilities and take into account the correlation of risk between different asset classes as well as the correlations between different products and business lines, recognising that correlations may not be linear. The ALM policy should also take into account any off-balance sheet exposures that the insurer may have and the contingency that risks transferred may revert to the insurer.

Different strategies may be appropriate for different categories of assets and liabilities. One possible approach to ALM is to identify separate homogeneous segments of liabilities and obtain investments for each segment that would be appropriate if each liability segment was a stand-alone business. Another possible approach is to manage the insurer’s assets and liabilities together as a whole. The latter approach may provide greater opportunities for profit and management of risk than the former. If ALM is practised for each business segment separately, this is likely to mean that the insurer may not benefit as much from the benefits of scale, hedging, diversification and reinsurance.

However, for some types of insurance business it may not be appropriate to manage risks by combining liability segments. It may be necessary for the insurer to devise separate and self-contained ALM policies for particular portfolios of assets that are ring-fenced or otherwise not freely available to cover obligations in other parts of the insurer.
16.5.5 Assets and liabilities may be ring-fenced to protect policyholders. For example, non-life insurance business is normally ring-fenced from life insurance business, and likewise, participating business is separated from non-participating. Supervisory requirements or the insurer’s ERM framework may require some liabilities to be closely matched with the supporting assets. For example, equity-linked or indexed-linked benefits may be closely matched with corresponding assets, and annuities’ cash outflows may be closely matched with cash inflows from fixed income instruments.

16.5.6 Some liabilities may have particularly long durations, such as certain types of liability insurance and whole-life policies and annuities. In these cases, assets with sufficiently long duration may not be available to match the liabilities, introducing a significant reinvestment risk, such that the present value of future net liability cash flows is particularly sensitive to changes in interest rates. There may also be gaps in the asset durations available. An ALM policy should address the risks arising from duration or other mismatches (for example, by holding adequate capital or having appropriate risk mitigation in place). The ERM framework should reflect the insurer’s capacity to bear ALM risk, according to the insurer’s risk appetite and risk limits structure.

Group perspectives

16.5.7 The group-wide ALM policy should take into account any legal restrictions that may apply to the treatment of assets and liabilities within the jurisdictions in which the group operates.

16.6 The supervisor requires the insurer’s ERM framework to include an explicit investment policy that:

- addresses investment risk according to the insurer’s risk appetite and risk limits structure;
- specifies the nature, role and extent of the insurer’s investment activities and how the insurer complies with regulatory investment requirements; and
- establishes explicit risk management procedures with regard to more complex and less transparent classes of asset and investments in markets or instruments that are subject to less governance or regulation; and
- as necessary, includes a counterparty risk appetite statement.

16.6.1 An investment policy may set out the insurer’s strategy for optimising investment returns and specify asset allocation strategies and authorities for investment activities and how these are related to the ALM policy.

16.6.2 The investment policy should address the safe-keeping of assets including custodial arrangements and the conditions under which investments may be pledged or lent.

16.6.3 Credit risk should be considered in the investment policy.

16.6.4 The investment policy should consider excessive asset concentration based on certain characteristics, including:
• type of asset;
• credit rating;
• issuer[counterparty or related entities of an issuer[counterparty;
• financial market;
• sector; and
• geographic area.

16.6.5 It is important for the insurer to understand the source, type and amount of investment risk. For example, it is important to understand who has the ultimate legal risk or basis risk in a complex chain of transactions. Similar questions arise where the investment is via external funds, especially when such funds are not transparent.

16.6.6 A number of factors may shape the insurer's investment strategy. For insurers in many jurisdictions concentration risk arising from the limited availability of suitable domestic investment vehicles may be an issue. By contrast, international insurers' investment strategies may be complex because of a need to manage or match assets and liabilities in a number of currencies and different markets. In addition, the need for liquidity resulting from potential large-scale payments may further complicate an insurer's investment strategy.

16.6.7 Where appropriate, the investment policy should outline how the insurer deals with inherently complex financial instruments such as derivatives, hybrid instruments that embed derivatives, private equity, hedge funds, insurance linked instruments and commitments transacted through special purpose entities. Complex or less transparent assets may present operational risks that are difficult to assess reliably, especially in adverse conditions.

16.6.8 An effective investment policy and ERM framework should provide for appropriately robust models reflecting relevant risks of complex investment activities (including underwriting guarantees for such complex securities). There should be explicit procedures to evaluate non-standard risks associated with complex structured products, especially new forms of concentration risk that may not be obvious.

16.6.9 For complex investment strategies, the insurer's investment policy and ERM framework may incorporate the use of stress testing and contingency planning to handle hard-to-model risks such as liquidity and sudden market movements. Trial operation of procedures may also be appropriate in advance of ‘live’ operation.

16.6.10 The insurer’s investment policy and ERM framework should be clear about the purpose of using derivatives and address whether it is appropriate for it to prohibit or restrict the use of some types of derivatives where, for example:

• the potential exposure cannot be reliably measured;
• closing out of a derivative is difficult considering the illiquidity of the market;
• the derivative is not readily marketable as may be the case with over-the-counter instruments;
• independent (ie external) verification of pricing is not available;
• collateral arrangements do not fully cover the exposure to the counterparty;
• the counterparty is not suitably creditworthy; and
• the exposure to any one counterparty exceeds a specified amount.

These factors are particularly important for unregulated over-the-counter derivatives. The effectiveness of clearing facilities available may be a relevant consideration in assessing the counterparty risk associated with some types of over-the-counter derivatives, such as credit default swaps.

16.6.11 A counterparty risk appetite statement sets out the level of risk the insurer is willing to accept that a counterparty will be unable to meet its obligations as they fall due. This may impact the insurer’s financial position through, for example, reductions in fair value or impairment of investments, loss of reinsurance cover, open market exposures or the loss of securities that have been loaned.

16.6.12 In deciding whether it is necessary to require a counterparty risk appetite statement, the supervisor should take into account the size of the insurer’s counterparty exposures, both in absolute terms and relative to the insurer’s portfolio, according to the characteristics outlined in Guidance 16.6.4, as well as the complexity and form of these exposures. Particular attention should be paid to financial sector counterparties, as these counterparties may be more likely to contribute to the build-up of systemic risk. Attention should also be paid to off-balance sheet exposures or commitments, as these may be more likely to materialise during stress.

**CF 16.6.a** The group-wide supervisor requires the Head of the IAIG to establish and maintain a group-wide investment policy that sets criteria for investment quality and addresses the selection of, and exposure to, low-quality investments or investments whose security is difficult to assess.

**CF 16.6.a.1** The group-wide investment policy should take into account the different regulatory investment requirements of the jurisdictions in which the IAIG operates.

**CF 16.6.b** The group-wide supervisor requires the Head of the IAIG to:

- set limits, or other requirements, in the group-wide investment policy so that assets are properly diversified and asset concentration risk is mitigated; and

- have a counterparty risk appetite statement.

**CF 16.6.b.1** The IAIG should avoid excessive concentrations in any particular:

- type of asset;
• credit rating;
• issuer/counterparty or related entities of an issuer/counterparty;
• financial market;
• sector; or
• geographic area.

CF 16.6.b.2 To support the assessment of concentrations, the IAIG should analyse aggregate exposures to individual counterparties and to groups of related counterparties both at the legal entity level and group-wide level.

CF 16.6.c The group-wide supervisor requires the Head of the IAIG to establish criteria on intra-group investments in the group-wide investment policy.

CF 16.6.c.1 Criteria on intra-group investments should take into account, when appropriate:

• liquidity;
• contagion or reputational risk;
• valuation uncertainty;
• impact on capital resources;
• nature of the IAIG’s business; and
• financial condition of the individual legal entities.

The fact that intragroup investments may be subject to supervisory approval, in certain jurisdictions, does not remove the requirement for the Head of the IAIG to set its own criteria.

CF 16.6.d The group-wide supervisor requires the Head of the IAIG to monitor investments on a group-wide basis to identify levels of investment exposure that do not comply with the group-wide investment policy.

CF 16.6.d.1 Group-wide investment exposures that exceed limits, or any other non-compliance, should be reported to the IAIG Board and Senior Management upon identification. Reports to the IAIG Board and Senior Management should include material exposures that, even if within limits, could create financial difficulties within the IAIG if the value or liquidity of the investments decreases.

16.7 The supervisor requires the insurer’s ERM framework to include an underwriting policy that addresses the:

• insurer’s underwriting risk according to the insurer's risk appetite and risk limits structure;
• nature of risks to be underwritten, including any material relationship with macroeconomic conditions; and
• interaction of the underwriting strategy with the insurer's reinsurance strategy and pricing.
16.7.1 An underwriting policy should cover the underwriting process, pricing, claims settlement and expense control (where applicable and relevant to the expenses of the underwriting process). Such a policy may include:

- the terms on which contracts are written and any exclusions;
- the procedures and conditions that need to be satisfied for risks to be accepted;
- additional premiums for substandard risks; and
- procedures and conditions that need to be satisfied for claims to be paid.

16.7.2 Control of expenses associated with underwriting and payment of claims is an important part of managing risk especially in conditions of high general rates of inflation. Inflation of claim amounts also tends to be high in such conditions for some types of risk. Insurers should have systems in place to control their expenses. These expenses should be monitored by the insurer on an ongoing basis.

16.7.3 The underwriting policy should take into account the effectiveness of risk transfer. This includes ensuring that:

- the insurer’s reinsurance programme provides coverage appropriate to its level of capital, the profile of the risks it underwrites, its business strategy and risk appetite; and
- the risk will not revert to the insurer in adverse circumstances.

16.7.4 In addressing the nature and amount of risks to be underwritten the underwriting policy should cover, at least:

- product classes the insurer is willing to write;
- relevant exposure limits (e.g. geographical, counterparty, economic sector); and
- a process for setting underwriting limits.

16.7.5 The underwriting policy should address the potential impact on the insurer’s financial position from material correlations between macroeconomic conditions and the insurance portfolio (for example by assessing the potential impact stemming from certain insurance products with embedded guarantees and options).

16.7.6 The underwriting policy should address:

- how an insurer analyses emerging risks in the underwritten portfolio; and
- how emerging risks are considered in modifying underwriting practices.

16.7.7 The underwriting policy should describe interactions with the reinsurance strategy and associated credit risk, and should include details of the reinsurance cover of certain product classes or particular risks.
CF 16.7.a The group-wide supervisor requires the Head of the IAIG to ensure that the IAIG implements its group-wide ERM framework by establishing procedures and monitoring practices for the use of sufficient, reliable and relevant data for its underwriting, pricing, reserving and reinsurance processes.

Group-wide claims management policy

CF 16.7.b The group-wide supervisor requires the Head of the IAIG to establish and maintain a group-wide claims management policy, as part of the group-wide ERM framework, that includes procedures for:

- claims estimation and settlement;
- feedback into the group-wide underwriting policy and reinsurance strategy; and
- claims data reporting for group analysis.

CF 16.7.b.1 The group-wide claims management policy may establish procedures for:

- delegations of authority for claims settlement;
- criteria for accepting or rejecting claims; and
- escalating claims.

CF 16.7.b.2 A group-wide claims management policy should allow insurance legal entities to establish individual claims management policies and processes, adjusted to supervisory requirements and circumstances in their jurisdictions.

CF 16.7.b.3 Escalating claims may include information about sudden increases in claim activity, delays in settlements and increased rejections.

Group-wide strategy for reinsurance and other forms of risk transfer

CF 16.7.c The group-wide supervisor requires the Head of the IAIG to establish and maintain a group-wide strategy for reinsurance and other forms of risk transfer as part of the group-wide ERM framework that considers the following issues, as applicable:

- the interaction with the group-wide risk and capital management strategies;
- how the risk appetite is achieved, on both a gross limit and net retention basis;
- the appetite for reinsurer credit risk, including approved security criteria for reinsurance transactions and aggregate exposure criteria to individual or related reinsurers;
- the autonomy afforded to individual insurance legal entities to enter into “entity specific” reinsurance arrangements, and the management and the aggregation of these exposures in the group-wide context;
- procedures for managing reinsurance recoverables, including required reporting from insurers;
• intra-group reinsurance strategy and practice;
• use of alternative risk transfer, including capital markets risk transfer products; and
• effectiveness of risk transfer in adverse circumstances.

CF 16.7.c.1 A strategy for other forms of risk transfer may include the use of capital markets risk transfer products (for example, insurance linked securities). Strategic considerations may include factors like the maturity of the capital markets offering such risk transfer products, regulatory approaches regarding the use of such risk transfer products, and overall mix of traditional reinsurance with other forms of risk transfer.

Group-wide actuarial policy

CF 16.7.d The group-wide supervisor requires the Head of the IAIG to establish and maintain a group-wide actuarial policy, as part of the group-wide ERM framework, that consists of a set of group-wide practice standards, covering at least:

• the process to assess the appropriateness, at the group-wide level, of the data, methodologies and underlying models used, as well as the assumptions made in the calculation of technical provisions;
• the process to calculate reinsurance recoverable assets taking into account the design of the reinsurance programme under the reinsurance strategy of the IAIG; and
• model risk management of internal models that generate actuarial and financial projections for solvency purposes.

CF 16.7.d.1 The group-wide practice standards comprising the group-wide actuarial policy should:

• be compliant with applicable laws and regulations, accounting regime, and professional actuarial standards;
• formalise materiality thresholds to trigger higher levels of management actions to ensure well-governed activities;
• provide for a data validation process that supports actuarial activities to ensure data quality, comprehensiveness, granularity and timeliness;
• provide a framework for determining assumptions used in valuations, including a process of incorporating the experience of the IAIG and its insurance legal entities, as well as a process of developing assumptions if the IAIG does not have enough experience in a particular business line or market;
• articulate model validation and maintenance procedure to ensure that model usage and model modifications align with the risk appetite and risk limits structure; and
• create consistent management information requirements from in-depth reviews and monitoring of actuarial activities.

**CF 16.7.d.2** The group-wide actuarial policy should contain practice standards to raise awareness of matters that have, or are likely to have, a materially adverse effect on the solvency, reserves or financial condition of one of the insurance legal entities, or the IAIG as a whole. Such standards would prompt the group-wide actuarial function to inform the relevant Board, Senior Management or Key Persons in Control Functions, as appropriate, for suitable action (see ICP 8 Risk Management and Internal Controls).

**CF 16.7.d.3** Differences in reporting may exist at the insurance legal entity level to comply with jurisdictional requirements. The group-wide actuarial policy should focus on group-wide reporting requirements, both for internal management purposes and for reporting and disclosure purposes. The group-wide reporting should reflect jurisdictional differences.

**CF 16.7.d.4** The group-wide actuarial policy should require an assessment of the consistency of the base assumptions used to derive technical provisions compared to those used to derive capital requirements, economic capital models, or the forward-looking view in the ORSA. Such an assessment of consistency may provide insight as to the coherence of the base assumptions and those applied in stress conditions.

**CF 16.7.e** The group-wide supervisor requires the group-wide actuarial function, as part of the group-wide ERM framework, to report (whether certified or not) to the IAIG Board annually on at least the following:

- a prospective actuarial analysis of the financial condition of the IAIG which goes beyond the current balance sheet of the IAIG;
- the reliability and sufficiency of the technical provisions;
- the adequacy of reinsurance credit for technical provisions; and
- consideration of non-insurance legal entities and non-regulated legal entities.

**CF 16.7.e.1** The group-wide actuarial function should provide the IAIG Board an actuarial analysis of the current and future financial condition of the IAIG given recent experience and the group-wide policies for underwriting, claims management and investment and the group-wide reinsurance strategy.

**CF 16.7.e.2** The group-wide actuarial function may use the underlying actuarial reports submitted by the individual insurance legal entities as input to its annual reporting to the IAIG Board. Further examples of issues that could be addressed include:
• the assumptions used by all of the insurance legal entities in the group and the consolidation/aggregation method applied at the group level;
• the methodologies used to determine current estimates by each insurance legal entity and the consolidation/aggregation method applied at the group level;
• the methodologies used to determine the margin over current estimate by each insurance legal entity and the consolidation/aggregation method applied at the group level;
• the availability and appropriateness of data used in valuations;
• back-testing of assumptions and valuations;
• uncertainty in current estimates used by both insurance legal entities and at the consolidated/aggregated group level;
• the adequacy of pricing, taking into account the underwriting policies, at the appropriate unit level, the insurance legal entity level and the group level;
• the performance of the IAIG’s insurance portfolios and analysis of any changes in business volumes, exposures, claims experience, mix of business and pricing during the year;
• asset-liability management under the group-wide investment policy;
• suitability and adequacy of reinsurance or other forms of risk transfer arrangements, taking into account the strategies for underwriting and claims management, as well as the overall financial condition and risk appetite of the IAIG; and
• the extent of reliance on the values provided by non-insurance legal entities.

16.8 The supervisor requires the insurer’s ERM framework to address liquidity risk and to contain strategies, policies and processes to maintain adequate liquidity to meet its liabilities as they fall due in normal and stressed conditions.

16.8.1 When analysing its liquidity profile, the insurer should assess the liquidity of both its assets and liabilities. The insurer should consider, where applicable, issues such as:
• market liquidity in normal and stressed conditions, quality of assets and its ability to monetise assets in each situation;
• characteristics of insurance contracts that may affect policyholder behaviour around lapse, withdrawal or renewal;
• adverse insurance events that may trigger short-term liquidity needs, including catastrophes;
• non-insurance activities such as marging or posting collateral for derivatives contracts, securities lending or repurchase agreements; and
• contingent sources of liquidity (including committed lines of credit or future premium income) and whether these would be available in stressed conditions.

16.8.2 An insurer should have well-defined processes and metrics in place, which may be simple or more advanced depending on its activities, to assess its liquidity position at different time horizons on a regular basis. An insurer’s liquidity analysis should cover both normal and stressed market conditions. The insurer should assess the results of such analysis in light of its risk appetite.

16.8.3 Upon the supervisor’s request, the insurer should report its liquidity risk management processes and analysis, including key assumptions or metrics.

Group perspectives

16.8.4 An insurance group’s assessment should result in a coherent view of liquidity risk across legal entities within the group. For example, where an individual legal entity relies on the head of the group for funding, this should be accounted for in both the individual legal entity’s and the head of the group’s liquidity analysis.

16.8.5 When analysing its liquidity position, an insurance group may use different scenarios and analyses on a legal entity level and group-wide level where appropriate. Such scenarios should take into account that circumstances may differ between individual legal entities and the group as a whole.

16.9 The supervisor requires, as necessary, the insurer to establish more detailed liquidity risk management processes, as part of its ERM framework, that include:

• liquidity stress testing;
• maintenance of a portfolio of unencumbered highly liquid assets in appropriate locations;
• a contingency funding plan; and
• the submission of a liquidity risk management report to the supervisor.

16.9.1 Liquidity risk increases as the imbalance between liquidity sources and needs grows, for instance due to liquidity transformation. Unexpected liquidity needs could be generated by, for example:

• derivatives, particularly any collateral or margin that needs to be posted for mark-to-market declines in the value of the contract;
• securities financing transactions, including repurchase agreements and securities lending;
• insurance products that contain provisions that allow a policyholder to withdraw cash from the policy with little notice or penalty; and
• insurance products covering natural catastrophes.

These activities may contribute to systemic risk when not properly managed, for instance when funds received from short-term securities lending or repurchase agreements or balances from more liquid insurance products are invested in illiquid assets.

16.9.2 Some insurers are required to establish more detailed liquidity risk management processes as compared to those processes set out in Standard 16.8. More detailed liquidity risk management processes are intended to help the insurer with its risk management. Additionally, the measures may provide the supervisor with a view on vulnerabilities that may cause funding shortfalls in stress.

16.9.3 Liquidity stress testing is a forward looking risk management tool to reveal vulnerabilities in the insurer’s liquidity profile and provide information on its ability to meet liabilities as they fall due. A portfolio of unencumbered highly liquid assets may provide a source of liquidity for the insurer to meet its liabilities as they fall due. A contingency funding plan, describing the strategies for addressing liquidity shortfalls in stress situations, may assist the insurer in addressing an unforeseen stress situation, where its liquid assets are insufficient or unexpectedly become illiquid. A liquidity management report could assist the insurer and the supervisor to address shortcomings in the insurer’s risk management by laying out details of its liquidity risk management in an accessible format.

16.9.4 In deciding whether it is necessary to require more detailed liquidity risk management processes, and the intensity of such processes, the supervisor should take into account the nature, scale and complexity of the insurer’s activities that lead to increased liquidity risk exposure as well as the risk amplification effects related to the size of the insurer. Increased liquidity risk exposure may depend on, for example, the magnitude of potential collateral or margin calls from derivatives or other transactions, the use of securities financing transactions or the characteristics of insurance contracts that may affect policyholder behaviour around lapse, withdrawal or renewal.

16.9.5 The supervisor may increase or decrease the intensity of these requirements by, for example, varying the frequency, scope and granularity of liquidity stress testing, the proportion of various types of highly liquid assets allowed in the portfolio or the form and level of detail in the contingency funding plan and liquidity risk management report.

16.9.6 Where an insurer is required to establish more detailed liquidity risk management processes, the supervisor should assess the effectiveness of their implementation, including the interaction with existing control mechanisms. Additionally, the supervisor should evaluate the quality and quantity of the assets that the insurer includes in its portfolio of highly liquid assets in light of the liquidity characteristics of its activities. The supervisor may develop its own, general, criteria for highly liquid assets.
CF 16.9.a The group-wide supervisor requires the Head of the IAIG to assess the IAIG’s resilience against severe but plausible liquidity stresses to determine whether current exposures are within the IAIG’s liquidity risk appetite.

CF 16.9.a.1 Forward-looking risk assessments should be done through scenario analysis or stress testing to reveal vulnerabilities in an IAIG’s liquidity profile and should be performed for material legal entities and the IAIG as a whole.

CF 16.9.a.2 Depending on its business model, an IAIG may be vulnerable to different liquidity stresses than other insurers. Certain activities may contribute to larger or less predictable liquidity needs. The group-wide supervisor should therefore consider the nature, scale, and complexity of the IAIG’s activities that lead to increased liquidity risk exposure as well as the risk amplification effects related to the size of the IAIG when setting its expectations of the IAIG’s stress testing. The group-wide supervisor may, based on these considerations, vary the frequency, scope and granularity of liquidity stress testing.

CF 16.9.a.3 The group-wide supervisor may suggest the IAIG include in its assessment certain stresses that have been informed by the group-wide supervisor’s macroprudential surveillance (ICP 24 Macroprudential Supervision).

CF 16.9.a.4 The IAIG may consider the following when designing severe but plausible stresses:

- exposure to insurable events;
- withdrawals from, and run-offs of, insurance policies;
- contingent off-balance sheet exposures;
- the impact of a deterioration in the IAIG’s credit rating;
- the ability to transfer liquidity between legal entities and between jurisdictions;
- currency convertibility and access to foreign exchange markets;
- reductions in the ability to access secured and unsecured wholesale funding; and
- the correlation and concentration of funding sources.

CF 16.9.a.5 The IAIG may consider the impact of chosen stresses on the appropriateness of its assumptions relating to:

- correlations between funding markets;
- the effectiveness of diversification across its chosen sources of funding;
- additional margin calls and collateral requirements;
- reliance on committed lines of credit;
• estimates of future balance sheet growth and premium income;
• the continued availability of market liquidity, including in currently highly liquid markets;
• ability to access secured and unsecured funding; and
• currency convertibility.

CF 16.9.a.6 The IAIG should evaluate its cash inflows (sources) and cash outflows (needs) under stress scenarios and determine its stressed liquidity position, i.e., its net stressed cash outflows.

CF 16.9.b The group-wide supervisor requires the Head of the IAIG to establish and maintain an adequate level of unencumbered highly liquid assets in appropriate locations.

CF 16.9.b.1 The IAIG should maintain adequate liquidity to meet its liabilities as they fall due in normal and stressed conditions. Where stress scenarios reveal stressed cash outflows that exceed stressed cash inflows, the IAIG should hold unencumbered highly liquid assets, with appropriate haircuts, of sufficient value to meet excess stressed cash outflows.

CF 16.9.b.2 The group-wide supervisor should consider the results of the IAIG’s stress testing or scenario analysis when assessing the quality and quantity of the assets that the IAIG considers to be highly liquid assets. Where an IAIG is subject to significant short-term liquidity needs (for example daily or weekly) the supervisor may require higher quality assets than an IAIG subject to longer-term needs. The group-wide supervisor may also require an IAIG with larger or less predictable stressed liquidity needs to hold a larger amount of highly liquid assets than an IAIG with smaller and more consistent liquidity needs.

CF 16.9.b.3 The IAIG should be able to demonstrate to the group-wide supervisor the liquidity of any assets it considers highly liquid assets in its liquidity risk management report.

CF 16.9.b.4 To promote their usability, assets that the IAIG relies on for liquidity should be free of legal, regulatory, contractual or other restrictions on the ability of the IAIG to liquidate, sell, transfer, or assign the assets (i.e., unencumbered).

CF 16.9.b.5 The Head of the IAIG should ensure that its portfolio of highly liquid assets is sufficiently diversified. This may include looking through to the underlying assets to determine the extent of concentration risk. The Head of the IAIG should also consider whether it holds a substantial share of the market for a particular instrument, counterparty or asset class to assess if the market would be able to bear the IAIG’s sales and whether market reaction would not adversely impact the IAIG’s ability to monetise its assets as planned.

CF 16.9.b.6 The Head of the IAIG should consider the marketability and realisability, including as acceptable collateral, of its highly liquid assets by taking into account factors such as market depth and access, monetisation timelines (for example delays in finding a willing buyer, time to settlement) and the likelihood and extent of forced-sale
losses. In stressed market conditions, it may not be feasible to value properly or sell some types of assets or to do so without a significant loss in value.

CF 16.9.b.7 Liquidity is not always freely transferable within a group when needed. The Head of the IAIG should ensure that liquidity is available to legal entities within the group when needed, subject to any applicable legal, regulatory or operational constraints, including cross-border constraints.

CF 16.9.b.8 The minimum criteria for determining asset liquidity may be addressed in the group-wide investment policy or a separate liquidity policy.

CF 16.9.c The group-wide supervisor requires the Head of the IAIG to maintain a contingency funding plan to respond to liquidity stress events.

CF 16.9.c.1 The group-wide supervisor should consider the nature, scale, and complexity of the IAIG’s activities that lead to increased liquidity risk exposure, as well as the risk amplification effects related to the size of the IAIG, when setting its expectations of the IAIG’s contingency funding plan requirements. This includes the form and level of detail of the contingency funding plan and the frequency for reviewing and updating the plan. The group-wide supervisor’s expectations may be informed by the IAIG’s liquidity stress testing or scenario analysis, which may reveal funding sources most likely to be impacted during stress and those on which the IAIG is most reliant. The group-wide supervisor may consider requiring a more detailed or frequently updated plan from an IAIG with more unpredictable cash inflows and outflows or where cash inflows and outflows are more significantly impacted by the IAIG’s liquidity stress tests or scenario analysis.

CF 16.9.c.2 A contingency funding plan describes the strategies for addressing liquidity shortfalls in stress situations, including the methods that the IAIG would use to access alternative sources of funding.

CF 16.9.c.3 A contingency funding plan should include quantitative metrics that the IAIG would use to identify a liquidity stress event, including the level and nature of the effect it would have on the IAIG’s liquidity position and on sources of available funding.

CF 16.9.c.4 A contingency funding plan should outline the strategies, policies and processes to manage a range of stresses. The plan should establish a clear allocation of roles and clear lines of management responsibility. The plan should define procedures for identifying early warning indicators for potential liquidity stress events that are based on the features of the IAIG’s business.

CF 16.9.c.5 The supervisor may allow the IAIG’s contingency funding plan to be developed as part of a recovery plan.

CF 16.9.d The group-wide supervisor requires the Head of the IAIG to report, at least annually, on its management of liquidity risk. The report includes at least the following:

- a liquidity risk appetite statement;
- established liquidity risk limits;
• a discussion of the current liquidity position of the IAIG in relation to its liquidity risk appetite and limits;
• a summary of strategies, policies and processes that the IAIG has in place to manage liquidity risk;
• a discussion of potential vulnerabilities in the IAIG’s liabilities as well as the means of enhancing the liquidity position; and
• the IAIG’s approach to, and results of, liquidity stress testing.

CF 16.9.d.1 The group-wide supervisor should consider the nature, scale, and complexity of the IAIG’s activities that lead to increased liquidity risk exposure as well as the risk amplification effects related to the size of the IAIG when setting liquidity reporting requirements, including the level of detail of the report and the frequency for reviewing and updating the report. The supervisor may determine that the reporting requirement is satisfied by reference to other risk management policies, risk reporting and/or the ORSA report.

CF 16.9.d.2 The summary of strategies, policies and processes should discuss any metrics the IAIG uses to identify, measure, monitor, and control liquidity risk as well as how the results from the liquidity stress testing are incorporated into day-to-day management of the IAIG. The Head of the IAIG should have a process in place to discuss the results and take the necessary actions.

Own risk and solvency assessment (ORSA)

16.10 The supervisor requires the insurer to perform regularly its own risk and solvency assessment (ORSA) to assess the adequacy of its risk management and current, and likely future, solvency position.

16.10.1 The insurer should document the main outcomes, rationale, calculations and action plans arising from its ORSA.

16.10.2 ORSAs should be largely driven by how an insurer is structured and how it manages itself. The performance of an ORSA at the insurance legal entity level does not exempt the group from conducting a group-wide ORSA.

16.11 The supervisor requires the insurer’s Board and Senior Management to be responsible for the ORSA.

16.11.1 The Board should adopt a rigorous process for setting, approving, and overseeing the effective implementation by Senior Management of the insurer’s ORSA.

16.11.2 Where appropriate, the effectiveness of the ORSA should be validated through internal or external independent overall review by a suitably experienced individual.

16.12 The supervisor requires the insurer’s ORSA to:

• encompass all reasonably foreseeable and relevant material risks including, at least, insurance, credit, market, concentration, operational and liquidity risks and (if applicable) group risk; and
• identify the relationship between risk management and the level and quality of financial resources needed and available;

and, as necessary:

• assess the insurer’s resilience against severe but plausible macroeconomic stresses through scenario analysis or stress testing; and

• assess aggregate counterparty exposures and analyse the effect of stress events on material counterparty exposures through scenario analysis or stress testing.

16.12.1 The insurer should consider in its ORSA all material risks that may have an impact on its ability to meet its obligations to policyholders, including in that assessment a consideration of the impact of future changes in economic conditions or other external factors. The insurer should undertake an ORSA on a regular basis so that it continues to provide relevant information for its management and decision making processes. The insurer should regularly reassess the sources of risk and the extent to which particular risks are material. Significant changes in the risk profile of the insurer should prompt it to undertake a new ORSA. Risk assessment should be done in conjunction with consideration of the effectiveness of applicable controls to mitigate the risks.

16.12.2 The ORSA should explicitly state which risks are quantifiable and which are non-quantifiable.

16.12.3 In deciding whether it is necessary to require scenario analysis or stress testing as part of the ORSA, and the frequency, scope and type of such scenario analysis or stress testing, the supervisor should take into account, for example, the nature, scale and complexity of the insurer, its business model and products and the size of the insurer’s exposures, both in absolute terms and relative to the insurer’s portfolio. For macroeconomic exposure, relevant factors may include the characteristics of the guarantees the insurer provides and the extent to which such guarantees are matched or hedged, the characteristics of any (automatic) asset reallocation mechanisms, the use of dynamic hedging, the insurer’s activity in derivatives markets or other drivers of volatility in the sources or uses of cash. For counterparty exposure, particular attention should be paid to financial sector counterparties, as these may be more likely to contribute to the build-up of systemic risk, and to off-balance sheet exposures or commitments, as these may be more likely to have an impact during stress.

Group perspectives

16.12.4 An insurance group’s ORSA should:

• include all reasonably foreseeable and relevant material risks arising from every legal entity within the insurance group and from the widest group of which the insurance group is part;

• take into account the fungibility of capital and the transferability of assets within the group; and
• ensure capital is not double counted.

16.12.5 Similarly, an insurance legal entity’s ORSA should include all additional risks arising from the widest group to the extent that they impact the insurance legal entity.

16.12.6 In the insurance legal entity’s ORSA and the insurance group’s ORSA, it may be appropriate to consider scenarios in which a group splits or changes its structure in other ways. Assessment of current capital adequacy and continuity analysis should include consideration of relevant possible changes in group structure and integrity in adverse circumstances and the implications this could have for group risks, the existence of the group and the support or demands from the group to or on its insurance legal entities.

16.12.7 Given the level of complexity at insurance group level compared with that at an insurance legal entity level, additional analysis and information is likely to be needed for the group's ORSA in order to address comprehensively the range of insurance group level risks. For example, it may be appropriate to apply a contagion test by using stress testing to assess the impact of difficulties in each legal entity within the insurance group on the other insurance group entities.

16.12.8 In conducting its group-wide ORSA, the group should be able to account for diversification in the group. Moreover, the group should be able to demonstrate how much of the diversification benefit would be maintained in a stress situation.

CF 16.12.a The group-wide supervisor requires the Head of the IAIG to perform a group-wide ORSA, using both quantitative and qualitative approaches, which takes into account at least:

• the legal and management structures of the group;
• group-wide economic capital models;
• risk aggregation;
• the fungibility of capital and the transferability of assets within the group; and
• the outputs of the economic capital model and the regulatory capital requirements.

CF 16.12.a.1 In conducting its group-wide ORSA, the IAIG should consider all material risks arising from its legal entities including non-regulated ones. In particular, political and reputational risks should be considered.

CF 16.12.b The group-wide supervisor requires the Head of the IAIG, as part of the group-wide ORSA, to:

• assess the IAIG’s resilience against severe but plausible macroeconomic stresses through scenario analysis or stress testing; and
- assess aggregate counterparty exposures and analyse the effect of stress events on material counterparty exposures through scenario analysis or stress testing.

CF 16.12.b.1 Scenario analysis of material counterparty exposures should assess the potential impact on the IAIG’s financial position of the deterioration of the credit-worthiness or of the default of individual legal entities, sectors or geographic areas.

**ORSA - economic and regulatory capital**

16.13 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 resources to meet regulatory capital requirements and any additional capital needs.

16.13.1 It is important that an insurer has regard for how risk management and capital management relate to and interact with each other. Therefore, an insurer should determine the overall financial resources it needs, taking into account its risk appetite, risk limits structure and business plans, based on an assessment of its risks, the relationship between them and the risk mitigation in place. Determining economic capital may help an insurer to assess how best to optimise its capital base, whether to retain or transfer risk and how to allow for risks in its pricing.

16.13.2 Although the amounts of economic capital and regulatory capital requirements and the methods used to determine them may differ, an insurer should be aware of, and be able to analyse and explain, these differences. Such analysis helps to embed supervisory requirements into an insurer's ORSA and risk and capital management, so as to ensure that obligations to policyholders continue to be met as they fall due.

16.13.3 As part of the ORSA, the insurer should perform its own assessment of the quality and adequacy of capital resources both in the context of determining its economic capital and in demonstrating that regulatory capital requirements are met having regard to the quality criteria established by the supervisor and other factors which the insurer considers relevant.

**Re-capitalisation**

16.13.4 If an insurer suffers losses that are absorbed by its available capital resources, it may need to raise new capital to meet ongoing regulatory capital requirements and to maintain its business strategies. It cannot be assumed that capital will be readily available at the time it is needed. Therefore, an insurer’s own assessment of the quality of capital should also consider the issue of re-capitalisation, especially the ability of capital to absorb losses on an ongoing basis and the extent to which
the capital instruments or structures that the insurer uses may facilitate or hinder future re-capitalisation. For example, if an insurer enters into a funding arrangement where future profits are cashed immediately, the reduced future earnings potential of the insurer may make it more difficult to raise capital resources in the future.

16.13.5 For an insurer to be able to recapitalise in times of financial stress, it is critical to maintain market confidence at all times, through its solvency and capital management, investor relationships, robust governance structure/practices and fair conduct of business practices. For example, where an insurer issues preferred stock without voting rights, this may affect the robustness of the governance structure and practice of that insurer. The voting rights attached to common stock can provide an important source of market discipline over an insurer’s management. Other insurers may issue capital instruments with lower coupons and fees, sacrificing the economic value of the existing shareholders and bondholders.

16.13.6 When market conditions are good, many insurers should be readily able to issue sufficient volumes of high quality capital instruments at reasonable levels of cost. However, when market conditions are stressed, it is likely that only well capitalised insurers, in terms of both the quality and quantity of capital resources held, will be able to issue high quality capital instruments. Other insurers may only be able to issue limited amounts of lower quality capital and at higher cost. Therefore, the supervisor should make sure that insurers have regard for such variations in market conditions and manage the quality and quantity of their capital resources in a forward looking manner. In this regard, it is expected that high quality capital instruments (such as common shares) should form the substantial part of capital resources in normal market conditions as that would enable insurers to issue capital instruments even in stressed situations. Such capital management approaches also help to address the procyclicality issues that may arise, particularly in risk-based solvency requirements.

Group perspectives

16.13.7 An insurance group should determine, as part of its ORSA, the overall financial resources it needs to manage its business given its risk appetite and business plans and demonstrate that its supervisory requirements are met. The insurance group’s risk management actions should be based on appropriate risk limits and consideration of its economic capital, regulatory capital requirements and financial resources. Economic capital should thus be determined by the insurance group as well as its insurance legal entities, and appropriate risk limits and management actions should be identified for both the insurance group and the insurance legal entities.

16.13.8 Key group-wide factors to be addressed in the insurer’s assessment of group-wide capital resources include multiple gearing, intra-group creation of capital and reciprocal financing, leverage of the quality of capital and fungibility of capital and free transferability of assets across group entities.

**ORSA - continuity analysis**
16.14 The supervisor requires:

- the insurer, as part of its ORSA, to analyse its ability to continue in business, and the risk management and financial resources required to do so over a longer time horizon than typically used to determine regulatory capital requirements; and

- the insurer’s continuity analysis to address a combination of quantitative and qualitative elements in the medium and longer-term business strategy of the insurer and include projections of its future financial position and analysis of its ability to meet future regulatory capital requirements.

**Capital planning and forward-looking perspectives**

16.14.1 An insurer should be able to demonstrate an ability to manage its risk over the longer term under a range of plausible adverse scenarios. An insurer’s capital management plans and capital projections are therefore key to its overall risk management strategy. These should allow the insurer to determine how it could respond to unexpected changes in market and economic conditions, innovations in the industry and other factors such as demographic, legal and regulatory, medical and social developments.

16.14.2 Where appropriate, the supervisor should require an insurer to undertake periodic, forward-looking continuity analysis and modelling of its future financial position including its ability to continue to meet its regulatory capital requirements in future under various conditions. Insurers should ensure that the capital and cash flow projections (before and after stress) and the management actions included in their forecasts are approved at a sufficiently senior level.

16.14.3 In carrying out its continuity analysis, the insurer should also apply reverse stress testing to identify scenarios that would be the likely cause of business failure (eg where business would become unviable or the market would lose confidence in it) and the actions necessary to manage this risk.

16.14.4 As a result of continuity analysis, the supervisor should encourage insurers to maintain contingency plans and procedures. Such plans should identify relevant countervailing measures and off-setting actions they could realistically take to restore/improve the insurer’s capital adequacy or cash flow position after some future stress event and assess whether actions should be taken by the insurer in advance as precautionary measures.

**Projections**

16.14.5 A clear distinction should be made between the assessment of the current financial position and the projections, stress testing and scenario analyses used to assess an insurer’s financial condition for the purposes of strategic risk management, including maintaining solvency. The insurer’s continuity analysis should help to ensure sound, effective and complete risk management processes, strategies and systems. It should also help to assess and maintain on an ongoing basis the amounts, types and distribution of financial resources needed to cover the nature and level of the risks to which the insurer is or may be exposed to and
to enable the insurer to identify and manage all reasonably foreseeable and relevant material risks. In doing so, the insurer assesses the impact of possible changes in business or risk strategy on the level of economic capital needed as well as the level of regulatory capital requirements.

16.14.6 Such continuity analysis should have a time horizon needed for effective business planning (for example, 3 to 5 years), which is longer than typically used to determine regulatory capital requirements. It should also place greater emphasis than may be considered in regulatory requirements on new business plans and product design and pricing, including embedded guarantees and options, and the assumptions appropriate given the way in which products are sold. The insurer's current premium levels and strategy for future premium levels are a key element in its continuity analysis. In order for continuity analysis to remain meaningful, the insurer should also consider changes in external factors such as possible future events including changes in the political or economic situation.

Link with business strategy

16.14.7 Through the use of continuity analysis an insurer should be better able to link its current financial position with future business plan projections and ensure its ability to maintain its financial condition in the future. This may help the insurer to further embed its ERM framework into its ongoing and future operations.

16.14.8 An internal model may also be used for the continuity analysis, allowing the insurer to assess the capital consequences of strategic business decisions in respect of its risk profile. For example, the insurer may decide to reduce its capital requirement through diversification by writing different types of business in order to reduce the capital that is needed to be held against such risks, potentially freeing up resources for use elsewhere. This process of capital management may enable the insurer to change its capital exposure as part of its long-term strategic decision making.

16.14.9 As a result of such strategic changes, the risk profile of an insurer may alter, so that different risks should be assessed and quantified within its internal model. In this way, an internal model may sit within a cycle of strategic risk and capital management and provide the link between these two processes.

Group perspectives

16.14.10 An insurance group should analyse its ability to continue in business and the risk management and financial resources it requires to do so. The insurance group’s analysis should consider its ability to continue to exist as an insurance group, potential changes in group structure and the ability of its legal entities to continue in business.

16.14.11 An insurance legal entity’s continuity analysis should assess the ongoing support from the group including the availability of financial support in adverse circumstances as well as the risks that may flow from the group to the insurance legal entity. The insurance legal entity and the insurance group should both take into account the business risks
they face including the potential impact of changes in the economic, political and regulatory environment.

16.14.12 In their continuity analysis, insurance groups should pay particular attention to whether the insurance group will have available cash flows (eg from surpluses released from long-term funds or dividends from other subsidiaries) and whether they will be transferable among legal entities within the group to cover any payments of interest or capital on loans, to finance new business and to meet any other anticipated liabilities as they fall due. Insurance groups should outline what management actions they would take to manage the potential cash flow implications in stressed conditions (eg reducing new business or cutting dividends).

16.14.13 The insurance group’s continuity analysis should also consider the distribution of capital in the insurance group after stress and the possibility that subsidiaries within the insurance group may require recapitalisation (either due to breaches of local regulatory requirements, a shortfall in economic capital, or for other business reasons). The assessment should consider whether sufficient sources of surplus and transferable capital would exist elsewhere in the insurance group and identify what management actions may need to be taken (eg intra-group movements of resources, other intra-group transactions or group restructuring).

16.14.14 The insurance group should also apply reverse stress testing to identify scenarios that could result in failure or cause the financial position of the insurance group to fall below a predefined level and the actions necessary to manage this risk.

Recovery Planning

16.15 The supervisor requires, as necessary, insurers to evaluate in advance their specific risks and options in possible recovery scenarios.

16.15.1 The supervisor may require an insurer to produce a recovery plan that identifies in advance options to restore the financial position and viability if the insurer comes under severe stress (see Application Paper on Recovery Planning). In deciding whether it is necessary to require a recovery plan, and the form, content and level of detail of such recovery planning, the supervisor should take into account, for example, the insurer’s complexity, systemic importance, risk profile and business model. A recovery plan is intended to serve the insurer as an aid to sound risk management. Additionally, if the insurer comes under severe stress, a plan may serve the supervisor as valuable input to any necessary supervisory measures.

16.15.2 The supervisor should require the insurer to provide the necessary information to enable the supervisor to assess the robustness and credibility of any recovery plan required. If the supervisor identifies material deficiencies in the plan, it should provide feedback and require the insurer to address these deficiencies.

16.15.3 The supervisor should require the insurer to review any recovery plan required on a regular basis, or when there are material changes to the insurer’s business, risk profile or structure, or any other change that
could have a material impact on the recovery plan, and to update it when necessary.

**CF 16.15.a** The group-wide supervisor requires the Head of the IAIG to:

- develop a recovery plan that identifies in advance options to restore the financial position and viability;
- review and update the recovery plan on a regular basis, or when there are material changes; and
- take actions for recovery if the IAIG comes under severe stress.

**CF 16.15.a.1** The group-wide supervisor should consider the IAIG’s nature, scale, and complexity when setting recovery plan requirements, including the form, content and detail of the recovery plan and the frequency for reviewing and updating the plan.

**CF 16.15.a.2** Recovery planning is the responsibility of the IAIG. The IAIG should be able to take timely actions for recovery, in particular when any predefined criteria are met that trigger the activation of the recovery plan.

**CF 16.15.a.3** A recovery plan developed by the IAIG should cover all material legal entities within the group.

**CF 16.15.a.4** A recovery plan should serve as a guide for the IAIG to plan and manage severe stress scenarios, although the actual nature and timing of recovery actions will depend on the circumstances.

**CF 16.15.a.5** The IAIG should ensure that:

- it has a robust governance structure and sufficient resources to support the recovery planning process, which includes clear allocation of responsibilities; and
- recovery planning is integrated into the IAIG’s overall governance processes.

**CF 16.15.a.6** A recovery plan is an integral part of the risk management process of an IAIG, aimed at identifying actions to be taken in severe stress scenarios that pose a serious risk to the viability of the IAIG, or any material part of its insurance business. A recovery plan describes if and how the IAIG would:

- discontinue or divest certain portfolios, business lines, legal entities, or other services; and/or
- continue operating certain lines of insurance business while restructuring or running off its discontinued business lines in an orderly fashion.

**CF 16.15.a.7** A recovery plan should include:

- a description of the legal entities covered by the plan, including their legal structures, interdependencies, core business lines and main risks;
- a description of functions and/or services that are significant for the continuation of the IAIG (for example,
shared services, such as information technology services and outsourced functions);

- pre-defined criteria with quantitative and qualitative trigger points, governance, escalation mechanisms and supporting processes;

- a range of severe stress scenarios, including both idiosyncratic and market-wide stress;

- credible options to respond to severe stress scenarios, including actions to address capital shortfalls and liquidity pressures, and to restore the financial condition of the IAIG, taking into account intra-group transactions;

- assessment of the necessary steps, costs, resources and time needed to implement the recovery actions, including the risks associated with the implementation of the actions; and

- strategies for communication with stakeholders.

CF 16.15.a.8 Pre-defined criteria should be well-defined and aligned with contingency plans. They should include qualitative and quantitative criteria, such as a potential breach of a prescribed capital requirement (PCR). Criteria may also include triggers based on: liquidity, market conditions, macro-economic conditions, and the insurer’s operational conditions.

CF 16.15.a.9 Possible actions for recovery include:

- strengthening the IAIG’s capital position, such as recapitalisations;

- capital conservation, such as cost containment and suspension of dividends and of payments of variable remuneration;

- reorganisation of corporate structure and divestitures, such as sales of legal entities or portfolios;

- voluntary restructuring of liabilities, such as debt-to-equity conversion; and

- securing sufficient diversified funding and adequate availability of collateral in terms of volume, location and quality.

CF 16.15.a.10 As a recovery plan may not be able to cover every possible scenario, the IAIG may take, or the group-wide supervisor may require the IAIG to take, measures for recovery other than those contemplated in the IAIG’s recovery plan.

CF 16.15.a.11 The group-wide supervisor should regularly review the recovery plan, including the predefined criteria, the assumptions and severe stress scenarios underlying the plan, to assess its credibility and likely effectiveness. Where necessary, the group-wide supervisor should
provide feedback and require the IAIG to address any material deficiencies.

**CF 16.15.b** The group-wide supervisor requires the Head of the IAIG to have and maintain group-wide management information systems that are able to produce information relevant to the recovery plan on a timely basis.

- **CF 16.15.b.1** The IAIG may rely on an existing information system, so long as it fulfils the objectives of producing information relevant to the recovery plan on a timely basis.
- **CF 16.15.b.2** It is important that the IAIG has available the information necessary for executing recovery actions when needed. Some of this information may be similar to the information needed for resolution; however, recovery may also require other information (see ComFrame material under ICP 12 Exit from the Market and Resolution).

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**Role of supervision in ERM for solvency purposes**

**16.16** The supervisor undertakes reviews of the insurer’s ERM framework, including the ORSA. Where necessary, the supervisor requires strengthening of the insurer’s ERM framework, solvency assessment and capital management processes.

- **16.16.1** The output of an insurer’s ORSA should serve as an important tool in the supervisory review process by helping the supervisor to understand the risk exposure and solvency position of the insurer.
- **16.16.2** The insurer’s ERM framework and risk management processes (including internal controls) are critical to solvency assessment. The supervisor should therefore assess the adequacy and soundness of an insurer’s framework and processes by receiving regularly the appropriate information, including the ORSA report.
- **16.16.3** In assessing the soundness, appropriateness and strengths and weaknesses of the insurer’s ERM framework, the supervisor should consider questions such as:
  - What are the roles and responsibilities within the ERM framework?
  - Is the insurer within its stated risk appetite?
  - What governance has been established for the oversight of outsourced elements of the ERM framework?
  - What modelling and stress testing (including reverse stress testing) is done?
  - Has the model risk management been applied in the ERM framework?
  - How does the insurer maintain a robust risk culture that ensures active support and adjustment of the insurer’s ERM framework in response to changing conditions?

- **16.16.4** The supervisor should review an insurer’s internal controls and monitor its capital adequacy, requiring strengthening where necessary. Where internal models are used to calculate the regulatory capital...
requirements, particularly close interaction between the supervisor and insurer is important. In these circumstances, the supervisor may consider the insurer’s internal model, its inputs and outputs and the validation processes, as a source of insight into the risk exposure and solvency position of the insurer.

16.16.5 The supervisor should monitor the techniques employed by the insurer for risk management and capital adequacy assessment and take supervisory measures where weaknesses are identified. The supervisor should not take a one-size-fits-all approach to insurers’ risk management but rather base their expectations on the nature, scale and complexity of its business and risks. In order to do this, the supervisor should have sufficient and appropriate resources and capabilities. For example, the supervisor may have a risk assessment model or programme with which it can assess insurers’ overall condition (e.g. risk management, capital adequacy and solvency position) and ascertain the likelihood of insurers breaching supervisory requirements. The supervisor may also prescribe minimum aspects that an ERM framework should address.

16.16.6 The supervisor should require the insurer to provide appropriate information on the ERM framework and risk and solvency assessments. This should provide the supervisor with a long-term assessment of capital adequacy to aid in the assessment of insurers, as well as encourage insurers to have an effective ERM framework. This may be achieved also by, the supervisor requiring or encouraging insurers to provide a solvency and financial condition report. Such a report may include information such as:

- a description of the relevant material categories of risk that the insurer faces;
- the insurer’s risk appetite and risk limits structure;
- the insurer’s overall financial resource needs, including its economic capital and regulatory capital requirements, as well as the capital available to meet these requirements; and
- projections of how such factors will develop in future.

16.16.7 The supervisor should be flexible and apply their skills, experience and knowledge of the insurer in assessing the adequacy of the risk appetite statement. The supervisor may be able to assess the quality of a particular risk appetite statement by discussing with the Board and Senior Management how the insurer’s business strategy is related to the risk appetite statement, as well as how the risk appetite had an impact on the insurer’s decisions. This includes reviewing other material, such as strategy and planning documents and Board reports in the context of how the Board determines, implements, and monitors its risk appetite so as to ensure that risk-taking is aligned with the Board-approved risk appetite statement.

16.16.8 The supervisor should be provided access to the material results of stress testing, scenario analysis and risk modelling and their key underlying assumptions to be reported to them and have access to other results, if requested. Where the supervisor considers that the calculations conducted by an insurer should be supplemented with
additional calculations, it should be able to require the insurer to carry out those additional calculations. The supervisor should also consider available reverse stress tests performed by insurers where they wish to assess whether appropriate action is being taken to manage the risk of business failure.

16.16.9 While insurers should carry out stress testing, scenario analysis and risk modelling that are appropriate for their businesses, the supervisor may also develop prescribed or standard tests and require insurers to perform them when warranted. One purpose of such testing may be to improve consistency of testing among a group of similar insurers. Another purpose may be to assess the financial condition of the insurance sector to economic, market or other stresses that apply to a number of insurers simultaneously (such as pandemics or major catastrophes). Such tests may be directed to be performed by selected insurers or all insurers. The criteria the supervisor uses for scenarios for standard tests should reflect the jurisdiction’s risk environment.

16.16.10 Forward-looking stress testing, scenario analysis and risk modelling of future capital positions and cash flows whether provided by the insurer’s own continuity analysis or in response to supervisory requirements is a valuable tool for the supervisor in assessing the financial condition of insurers. Such testing informs the discussion between the supervisor and insurers on appropriate planning, comparing risk assessments against stress test outcomes, risk management and management actions. The supervisor should consider the dynamic position of insurers and form a high-level assessment of whether the insurer is adequately capitalised to withstand a range of standardised and bespoke stresses.

16.16.11 Where an internal model, including an economic capital model, is used in an insurer’s ORSA, the supervisor should obtain an understanding of the underlying assumptions used. The supervisor should review the outputs of the internal model, at least from the following viewpoints:

- scope of risk categories of the internal model;
- the insurer’s prioritisation of risks in its risk appetite; and
- the insurer’s use of the outputs in making major management decisions on capital planning for meeting regulatory capital requirements.

16.16.12 By reviewing the insurer’s ORSA continuity analysis, the supervisor may be able to learn about the robustness of an insurer’s future financial condition and the information on which the insurer bases decisions and its contingency planning. Such information should enable the supervisor to assess whether an insurer should improve its ERM framework by taking additional countervailing measures and off-setting actions, either immediately, as a preventive measure, or including them in future plans. Objectives of such supervisory measures may be to reduce any projected financial inadequacies, improve cash flows and/or increase an insurer’s ability to restore its capital adequacy after stress events.

16.16.13 Publicly disclosing information on risk management may improve the transparency and comparability of existing solvency requirements. There should be an appropriate balance regarding the level of
information to disclose about an insurer's risk management against the level of sufficient information for external and internal stakeholders which is useful and meaningful. Therefore, the requirements for public disclosure of information on risk management, including possible disclosure of elements of a solvency and financial condition report, should be carefully considered by the supervisor taking into account the proprietary nature of the information.

16.16.14 Where an insurer's risk management and solvency assessment are not considered adequate by the supervisor, the supervisor should take appropriate measures. This could be in the form of further supervisory reporting or additional qualitative and quantitative requirements arising from the supervisor's assessment. Additional quantitative requirements should only be applied in appropriate circumstances and be subject to a transparent supervisory framework. Otherwise, if routinely applied, such measures may undermine a consistent application of standardised approaches to regulatory capital requirements.

Group perspectives

16.16.15 In assessing the soundness, appropriateness and strengths and weaknesses of the group’s ERM framework, the group-wide supervisor should consider questions such as:

- How well is the group’s ERM framework tailored to the group?
- Are decisions influenced appropriately by the group’s ERM framework outputs?
- How responsive is the group’s ERM framework to changes in individual businesses and to the group structure?
- How does the framework bring into account intra-group transactions; risk mitigation; and constraints on fungibility of capital, transferability of assets, and liquidity?

16.16.16 The group-wide supervisor should review the risk management and financial condition of the insurance group. Where necessary, the group-wide supervisor should require strengthening of the insurance group’s risk management, solvency assessment and capital management processes, as appropriate to the nature, scale and complexity of risks at group level. The group-wide supervisor should inform the other involved supervisors of any action required.

16.16.17 The group-wide supervisory review and assessment of the insurance group’s ERM framework should consider the framework’s suitability as a basis for group-wide solvency assessment. The arrangements for managing conflicts of interest across an insurance group should be a particular focus in the supervisory review and assessment of an insurance group’s ERM framework.

16.16.18 The supervisory assessment of the group’s ERM framework may affect the level of capital that the insurance group is required to hold for regulatory purposes and any regulatory restrictions that are applied. For example, the group-wide supervisor may require changes to the recognition of diversification across the insurance group, the allowances
made for operational risk and the allocation of capital within the insurance group.

16.16.19 Although it is not a requirement in general for an insurance legal entity or an insurance group to use internal models to carry out its ORSA, the supervisor may consider it appropriate in particular cases that the ORSA should use internal models in order to achieve a sound ERM framework. The quality of an insurance group’s ORSA is dependent on how well integrated its internal capital models, the extent to which it takes into account constraints on fungibility of capital and its ability to model changes in its structure, the transfer of risks around the insurance group and insurance group risk mitigation. These factors should be taken into account by the group-wide supervisor in its review of the insurance group’s ORSA.

16.16.20 The supervisor may wish to specify criteria or analyses as part of the supervisory risk assessments to achieve effective supervision and consistency across insurance groups. This may, for example, include prescribed stress tests that apply to insurance groups.
ICP 17  Capital Adequacy
The supervisor establishes capital adequacy requirements for solvency purposes so that insurers can absorb significant unforeseen losses and to provide for degrees of supervisory intervention.

Introductory Guidance

17.0.1 This ICP does not directly apply to non-insurance entities (regulated or unregulated) within an insurance group, but it does apply to insurance legal entities and insurance groups with regard to the risks posed to them by non-insurance entities.

Capital adequacy in the context of a total balance sheet approach

17.1 The supervisor requires that a total balance sheet approach is used in the assessment of solvency to recognise the interdependence between assets, liabilities, regulatory capital requirements and capital resources and to require that risks are appropriately recognised.

17.1.1 The overall financial position of an insurer should be based on consistent measurement of assets and liabilities and explicit identification and consistent measurement of risks and their potential impact on all components of the balance sheet. In this context, the IAIS uses the term total balance sheet approach to refer to the recognition of the interdependence between assets, liabilities, regulatory capital requirements and capital resources. A total balance sheet approach should also require that the impacts of relevant material risks on an insurer’s overall financial position are appropriately and adequately recognised.\(^6\)

17.1.2 The assessment of the financial position of an insurer for supervision purposes addresses the insurer’s technical provisions, required capital and available capital resources. These aspects of solvency assessment (namely technical provisions and capital) are intrinsically inter-related and cannot be considered in isolation by a supervisor.

17.1.3 Technical provisions and capital have distinct roles, requiring a clear and consistent definition of both elements. Technical provisions represent the amount that an insurer requires to fulfil its insurance obligations and settle all commitments to policyholders and other beneficiaries arising over the lifetime of the portfolio.\(^7\) In this ICP, the term regulatory capital requirements refers to financial requirements that are set by the supervisor and relates to the determination of amounts of capital that an insurer must have in addition to its technical provisions.

17.1.4 Technical provisions and regulatory capital requirements should be covered by adequate and appropriate assets, having regard to the nature and quality of those assets. To allow for the quality of assets, supervisors

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\(^6\) It is noted that the total balance sheet approach is an overall concept rather than implying use of a particular methodology.

\(^7\) This includes costs of settling all commitments to policyholders and other beneficiaries arising over the lifetime of the portfolio of policies, the expenses of administering the policies, the costs of hedging, reinsurance, and of the capital required to cover the remaining risks.
may consider applying restrictions or adjustments (such as quantitative limits, asset eligibility criteria or “prudential filters”) where the risks inherent in certain asset classes are not adequately covered by the regulatory capital requirements.

17.1.5 Capital resources may be regarded very broadly as the amount of the assets in excess of the amount of the liabilities. Liabilities in this context includes technical provisions and other liabilities (to the extent these other liabilities are not treated as capital resources - for example, liabilities such as subordinated debt may under certain circumstances be given credit for regulatory purposes as capital – see Guidance 17.10.8 - 17.10.11). Assets and liabilities in this context may include contingent assets and contingent liabilities.

17.1.6 In considering the quality of capital resources the supervisor should have regard to their characteristics, including the extent to which the capital is available to absorb losses (including considerations of subordination and priority), the extent of the permanent and/or perpetual nature of the capital and the existence of any mandatory servicing costs in relation to the capital.8

Additional guidance for insurance groups and insurance legal entities that are members of groups

17.1.7 The capital adequacy assessment of an insurance legal entity which is a member of an insurance group needs to consider the value of any holdings the insurance legal entity has in affiliates. Consideration may be given, either at the level of the insurance legal entity or the insurance group, to the risks attached to this value.

17.1.8 Where the value of holdings in affiliates is included in the capital adequacy assessment and the insurance legal entity is the parent of the group, group-wide capital adequacy assessment and legal entity assessment of the parent may be similar in outcome although the detail of the approach may be different. For example, a group-wide assessment may consolidate the business of the parent and its subsidiaries and assess the capital adequacy for the combined business while a legal entity assessment of the parent may consider its own business and its investments in its subsidiaries.

17.1.9 There are various possible approaches for group-wide supervision. More specifically, undertaking a capital adequacy assessment of an insurance group falls into two broad sets of approaches:

- group level focus; and
- legal entity focus.

“Hybrid” or intermediate approaches which combine elements of approaches with a group and a legal entity focus may also be used.

17.1.10 The choice of approach would depend on the preconditions in a jurisdiction, the legal environment which may specify the level at which the group-wide capital requirements are set, the structure of the group

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8 More detailed guidance on the determination of capital resources is given below.
and the structure of the supervisory arrangements between the supervisors.

17.1.11 To further describe and compare the various approaches to group-wide capital adequacy assessment, a two dimensional continuum may be considered; on one axis – the organisational perspective – consideration is given to the extent to which a group is considered as a set of interdependent entities or a single integrated entity; on the other axis – the supervisory perspective – consideration is given to the relative weight of the roles of insurance legal entity supervision and group-wide supervision, without implying that the latter can replace the former in any way. It is recognised that supervisors around the world have adopted approaches corresponding to many points of this continuum. The continuum may be split into four quadrants as shown in Figure 17.1 below.

Figure 17.1

<table>
<thead>
<tr>
<th>Supervisory Perspective</th>
<th>Organisational Perspective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large relative weight of group supervision with respect to local supervision</td>
<td>Legal Entity Focus</td>
</tr>
<tr>
<td>Insurance legal entity capital adequacy assessed for all (relevant) legal entities taking into account group impact. The results are binding and valid for local supervisors as well as for the group supervisor</td>
<td>Insurance legal entity capital adequacy assessed under the assumption that the group behaves as a single integrated entity. Local and group supervisors additionally define how much capital each legal entity has to hold.</td>
</tr>
<tr>
<td>Small relative weight of group supervision with respect to local supervision</td>
<td>Insurance legal entity capital adequacy assessed for all (relevant) legal entities taking into account group impact. These results are not binding; local supervisors apply insurance legal entity capital adequacy requirements.</td>
</tr>
</tbody>
</table>

Additional guidance for insurance groups and insurance legal entities that are members of groups - group level focus

17.1.12 Under a group-wide capital adequacy assessment which takes a group level focus, the insurance group is considered primarily as a single integrated entity for which a separate assessment is made for the group as a whole on a consistent basis, including adjustments to reflect constraints on the fungibility of capital and transferability of assets among group members. Hence under this approach, a total balance sheet approach to solvency assessment is followed which is (implicitly
or explicitly) based on the balance sheet of the insurance group as a whole. However, adjustments may be necessary appropriately to take into account risks from non-insurance members of the insurance group, including cross-sector regulated entities and non-regulated entities.

17.1.13 Methods used for approaches with a group level focus may vary in the way in which group capital requirements are calculated. Either the group’s consolidated accounts may be used as a basis or an aggregation method may be used. The former is already adjusted for intra-group holdings and further adjustments may then need to be made to reflect the fact that the group may not behave or be allowed to behave as one single entity. This is particularly the case in stressed conditions. The latter method may sum surpluses or deficits (i.e., the difference between capital resources and capital requirements) for each insurance legal entity in the group with relevant adjustments for intra-group holdings in order to measure an overall surplus or deficit at group level. Alternatively, it may sum the insurance legal entity capital requirements and insurance legal entity capital resources separately in order to measure a group capital requirement and group capital resources. Where an aggregation approach is used for a cross-border insurance group, consideration should be given to consistency of valuation and capital adequacy requirements and of their treatment of intra-group transactions.

Additional guidance for insurance groups and insurance legal entities that are members of groups - legal entity focus

17.1.14 Under a group-wide capital adequacy assessment which takes a legal entity focus, the insurance group is considered primarily as a set of interdependent legal entities. The focus is on the capital adequacy of each of the parent and the other insurance legal entities in the insurance group, taking into account risks arising from relationships within the group, including those involving non-insurance members of the group. The regulatory capital requirements and resources of the insurance legal entities in the group form a set of connected results but no overall regulatory group capital requirement is used for regulatory purposes. This is still consistent with a total balance sheet approach, but considers the balance sheets of the individual group entities simultaneously rather than amalgamating them to a single balance sheet for the group as a whole. Methods used for approaches with a legal entity focus may vary in the extent to which there is a common basis for the solvency assessment for all group members and the associated communication and coordination needed among supervisors.

17.1.15 For insurance legal entities that are members of groups and for insurance sub-groups that are part of a wider insurance or other sector group, the additional reasonably foreseeable and relevant material risks arising from being a part of the group should be taken into account in capital adequacy assessment.

Establishing regulatory capital requirements

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9 Consolidated accounts may be those used for accounting purposes or may differ (e.g., in terms of the entities included in the consolidation).
17.2 The supervisor establishes regulatory capital requirements at a sufficient level so that, in adversity, an insurer’s obligations to policyholders will continue to be met as they fall due and requires that insurers maintain capital resources to meet the regulatory capital requirements.

Purpose and role of regulatory capital requirements and resources

17.2.1 An insurer’s Board and Senior Management have the responsibility to ensure that the insurer has adequate and appropriate capital to support the risks it undertakes. Capital serves to reduce the likelihood of failure due to significantly adverse losses incurred by the insurer over a defined period, including decreases in the value of the assets and/or increases in the obligations of the insurer, and to reduce the magnitude of losses to policyholders in the event that the insurer fails.

17.2.2 From a regulatory perspective, the purpose of capital is to ensure that, in adversity, an insurer’s obligations to policyholders will continue to be met as they fall due. Regulators should establish regulatory capital requirements at the level necessary to support this objective.

17.2.3 In the context of its own risk and solvency assessment (ORSA), the insurer would generally be expected to consider its financial position from a going concern perspective (that is, assuming that it will carry on its business as a going concern and continue to take on new business) but may also need to consider a run-off and/or winding-up perspective (eg where the insurer is in financial difficulty). The determination of regulatory capital requirements may also have aspects of both a going concern and a run-off or winding-up perspective. In establishing regulatory capital requirements, therefore, supervisors should consider the financial position of insurers under different scenarios of operation.

17.2.4 From a macro-economic perspective, requiring insurers to maintain adequate and appropriate capital enhances the safety and soundness of the insurance sector and the financial system as a whole, while not increasing the cost of insurance to a level that is beyond its economic value to policyholders or unduly inhibiting an insurer’s ability to compete in the marketplace. There is a balance to be struck between the level of risk that policyholder obligations will not be paid with the cost to policyholders of increased premiums to cover the costs of servicing additional capital.

17.2.5 The level of capital resources that insurers need to maintain for regulatory purposes is determined by the regulatory capital requirements specified by the supervisor. A deficit of capital resources relative to capital requirements determines the additional amount of capital that is required for regulatory purposes.

17.2.6 Capital resources protect the interests of policyholders by meeting the following two objectives. They:

- reduce the probability of insolvency by absorbing losses on a going concern basis or in run-off; and/or

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10 In this context, “run-off” refers to insurers that are still solvent but have closed to new business and are expected to remain closed to new business.
• reduce the loss to policyholders in the event of insolvency or winding-up.

17.2.7 The extent to which elements of capital achieve the above outcomes will vary depending on their characteristics or “quality”. For example, ordinary share capital may be viewed as achieving both of the above, whereas subordinated debt may be viewed largely as only protecting policyholders in insolvency. Capital which achieves both of the above is sometimes termed “going concern capital” and capital which only reduces the loss to policyholders in insolvency is sometimes termed “wind-up capital” or “gone concern” capital. It would be expected that the former (ie going concern capital instruments) should form the substantial part of capital resources.

17.2.8 For an insurer, the management and allocation of capital resources is a fundamental part of its business planning and strategies. In this context, capital resources typically serve a broader range of objectives than those in Guidance 17.2.6. For example, an insurer may use capital resources over and above the regulatory capital requirements to support future growth or to achieve a targeted credit rating.

17.2.9 It is noted that an insurer’s capital management (in relation to regulatory requirements and own capital needs) should be supported and underpinned by establishing and maintaining a sound enterprise risk management framework, including appropriate risk and capital management policies, practices and procedures which are applied consistently across its organisation and are embedded in its processes. Maintaining sufficient capital resources alone is not sufficient protection for policyholders in the absence of disciplined and effective risk management policies and processes (see ICP 16 Enterprise Risk Management for Solvency Purposes).

Additional guidance for insurance groups and insurance legal entities that are members of groups

17.2.10 The supervisor should require insurance groups to maintain capital resources to meet regulatory capital requirements. These requirements should take into account the non-insurance activities of the insurance group. For supervisors that undertake group-wide capital adequacy assessments with a group level focus this means maintaining insurance group capital resources to meet insurance group capital requirements for the group as a whole. For supervisors that undertake group-wide capital adequacy assessments with a legal entity focus this means maintaining capital resources in each insurance legal entity based on a set of connected regulatory capital requirements for the group’s insurance legal entities which fully take the relationships and interactions between these legal entities and other entities in the insurance group into account.

17.2.11 It is not the purpose of group-wide capital adequacy assessment to replace assessment of the capital adequacy of the individual insurance legal entities in an insurance group. Its purpose is to require that group risks are appropriately allowed for and the capital adequacy of individual insurers is not overstated, eg as a result of multiple gearing and leverage of the quality of capital or as a result of risks emanating from the wider
group, and that the overall impact of intra-group transactions is appropriately assessed.

17.2.12 Group-wide capital adequacy assessment considers whether the amount and quality of capital resources relative to required capital is adequate and appropriate in the context of the balance of risks and opportunities that group membership brings to the group as a whole and to insurance legal entities which are members of the group. The assessment should satisfy requirements relating to the structure of group-wide regulatory capital requirements and eligible capital resources and should supplement the individual capital adequacy assessments of insurance legal entities in the group. It should indicate whether there are sufficient capital resources available in the group so that, in adversity, obligations to policyholders will continue to be met as they fall due. If the assessment concludes that capital resources are inadequate or inappropriate then corrective action may be triggered either at a group (eg authorised holding or parent company level) or an insurance legal entity level.

17.2.13 The quantitative assessment of group-wide capital adequacy is one of a number of tools available to supervisors for group-wide supervision. If the overall financial position of a group weakens it may create stress for its members either directly through financial contagion and/or organisational effects or indirectly through reputational effects. Group-wide capital adequacy assessment should be used together with other supervisory tools, including in particular the capital adequacy assessment of insurance legal entities in the group. A distinction should be drawn between regulated entities (insurance and other sector) and non-regulated entities. It is necessary to understand the financial positions of both types of entities and their implications for the capital adequacy of the insurance group but this does not necessarily imply setting regulatory capital requirements for non-regulated entities. In addition, supervisors should have regard to the complexity of intra-group relationships (between both regulated and non-regulated entities), contingent assets and liabilities and the overall quality of risk management in assessing whether the overall level of safety required by the supervisor is being achieved.

17.2.14 For insurance legal entities that are members of groups and for insurance sub-groups that are part of a wider insurance or other sector group, capital requirements and capital resources should take into account all additional reasonably foreseeable and relevant material risks arising from being a part of any of the groups.

Structure of regulatory capital requirements - solvency control levels

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.

Establishing solvency control levels

17.3.1 The supervisor should establish control levels that trigger intervention by the supervisor in an insurer’s affairs when capital resources fall below
these control levels. The control level may be supported by a specific framework or by a more general framework providing the supervisor latitude of action. A supervisor’s goal in establishing control levels is to safeguard policyholders from loss due to an insurer’s inability to meet its obligations when due.

17.3.2 The solvency control levels provide triggers for action by the insurer and supervisor. Hence they should be set at a level that allows intervention at a sufficiently early stage in an insurer’s difficulties so that there would be a realistic prospect for the situation to be rectified in a timely manner with an appropriate degree of urgency. At the same time, the reasonableness of the control levels should be examined in relation to the nature of the corrective measures. The risk tolerance of the supervisor will influence both the level at which the solvency control levels are set and the intervention actions that are triggered.

17.3.3 When establishing solvency control levels it is recognised that views about the level that is acceptable may differ from jurisdiction to jurisdiction and by types of business written and will reflect, amongst other things, the extent to which the pre-conditions for effective supervision exist within the jurisdiction and the risk tolerance of the particular supervisor. The IAIS recognises that jurisdictions will acknowledge that a certain level of insolvencies may be unavoidable and that establishing an acceptable threshold may facilitate a competitive marketplace for insurers and avoid inappropriate barriers to market entry.

17.3.4 The criteria used by the supervisor to establish solvency control levels should be transparent. This is particularly important where legal action may be taken in response to an insurer violating a control level. In this case, control levels should generally be simple and readily explainable to a court when seeking enforcement of supervisory action.

17.3.5 Supervisors may need to consider different solvency control levels for different modes of operation of the insurer - such as an insurer in run-off or an insurer operating as a going concern. These different scenarios and considerations are discussed in more detail in Guidance 17.6.3 - 17.6.5.

17.3.6 In addition, the supervisor should consider the allowance for management discretion and future action in response to changing circumstances or particular events. In allowing for management discretion, supervisors should only recognise actions which are practical and realistic in the circumstances being considered.

17.3.7 Other considerations in establishing solvency control levels include:

- the way in which the quality of capital resources is addressed by the supervisor;
- the coverage of risks in the determination of technical provisions and regulatory capital requirements and the extent

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11 The supervisor should carefully consider the appropriateness of allowing for such management discretion in the particular case of the MCR as defined in Standard 17.4.
of the sensitivity or stress analysis underpinning those requirements;

- the relation between different levels (for example the extent to which a minimum is set at a conservative level);

- the powers of the supervisor to set and adjust solvency control levels within the regulatory framework;

- the accounting and actuarial framework that applies in the jurisdiction (in terms of the valuation basis and assumptions that may be used and their impact on the values of assets and liabilities that underpin the determination of regulatory capital requirements);

- the comprehensiveness and transparency of disclosure frameworks in the jurisdiction and the ability for markets to exercise sufficient scrutiny and impose market discipline;

- policyholder priority and status under the legal framework relative to other creditors in the jurisdiction;

- overall level of capitalisation in the insurance sector in the jurisdiction;

- overall quality of risk management and governance frameworks in the insurance sector in the jurisdiction;

- the development of capital markets in the jurisdiction and its impact on the ability of insurers to raise capital; and

- the balance to be struck between protecting policyholders and the impact on the effective operation of the insurance sector and considerations around unduly onerous levels and costs of regulatory capital requirements.

Additional guidance for insurance groups and insurance legal entities that are members of groups

17.3.8 While the general considerations in Guidance 17.3.1 to 17.3.7 above on the establishment of solvency control levels apply in a group-wide context as well as a legal entity context, the supervisory actions triggered at group level will be likely to differ from those at legal entity level. As a group is not a legal entity the scope for direct supervisory action in relation to the group as a whole is more limited and action may need to be taken through co-ordinated action at insurance legal entity level.

17.3.9 Nevertheless, group solvency control levels are a useful tool for identifying a weakening of the financial position of a group as a whole or of particular parts of a group, which may, for example, increase contagion risk or impact reputation which may not otherwise be readily identified or assessed by supervisors of individual group entities. The resulting timely identification and mitigation of a weakening of the financial position of a group may thus address a threat to the stability of the group or its component insurance legal entities.

17.3.10 Group-wide solvency control levels may trigger a process of coordination and cooperation between different supervisors of group entities which
will facilitate mitigation and resolution of the impact of group-wide stresses on insurance legal entities within a group. Group-wide control levels may also provide a trigger for supervisory dialogue with the group’s management.

**Structure of regulatory capital requirements - triggers for supervisory intervention in the context of legal entity capital adequacy assessment**

17.4 In the context of insurance legal entity capital adequacy assessment, the regulatory capital requirements establish:

- a solvency control level above which the supervisor does not intervene on capital adequacy grounds. This is referred to as the Prescribed Capital Requirement (PCR). The PCR is defined such that assets will exceed technical provisions and other liabilities with a specified level of safety over a defined time horizon.

- a solvency control level at which, if breached, the supervisor would invoke its strongest actions, in the absence of appropriate corrective action by the insurance legal entity. This is referred to as the Minimum Capital Requirement (MCR). The MCR is subject to a minimum bound below which no insurer is regarded to be viable to operate effectively.

17.4.1 A range of different intervention actions should be taken by a supervisor depending on the event or concern that triggers the intervention. Some of these triggers will be linked to the level of an insurer’s capital resources relative to the level at which regulatory capital requirements are set.

17.4.2 In broad terms, the highest regulatory capital requirement, the Prescribed Capital Requirement (PCR), will be set at the level at which the supervisor would not require action to increase the capital resources held or reduce the risks undertaken by the insurer. However if the insurer’s capital resources were to fall below the level at which the PCR is set, the supervisor would require some action by the insurer to either restore capital resources to at least the PCR level or reduce the level of risk undertaken (and hence the required capital level).

17.4.3 The regulatory objective to require that, in adversity, an insurer’s obligations to policyholders will continue to be met as they fall due will be achieved without intervention if technical provisions and other liabilities are expected to remain covered by assets over a defined period, to a specified level of safety. As such, the PCR should be determined at a level such that the insurer is able to absorb the losses from adverse events that may occur over that defined period and the technical provisions remain covered at the end of the period.

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12 Note that this does not preclude the supervisor from intervention or requiring action by the insurer for other reasons, such as weaknesses in the risk management or governance of the insurer. Nor does it preclude the supervisor from intervention when the insurer’s capital resources are currently above the PCR but are expected to fall below that level in the short term. To illustrate, the supervisor may establish a trend test (a time series analysis). A sufficiently adverse trend would require some supervisory action. The trend test would support the objective of early regulatory intervention by considering the speed at which capital deterioration is developing.

13 To the extent these liabilities are not treated as capital resources.
17.4.4 The Minimum Capital Requirement (MCR) represents the supervisory intervention point at which the supervisor would invoke its strongest actions, if further capital is not made available. Therefore, the main aim of the MCR is to provide the ultimate safety net for the protection of the interests of policyholders.

17.4.5 These actions could include stopping the activities of the insurer, withdrawal of the insurer’s licence, requiring the insurer to close to new business and run-off the portfolio, transfer its portfolio to another insurer, arrange additional reinsurance, or other specified actions. This position is different from the accounting concept of insolvency as the MCR would be set at a level in excess of that at which the assets of the insurer were still expected to be sufficient to meet the insurer’s obligations to existing policyholders as they fall due. The PCR cannot be less than the MCR, and therefore the MCR may also provide the basis of a lower bound for the PCR, which may be especially appropriate in cases where the PCR is determined on the basis of an insurer's internal model approved for use in determining regulatory capital requirements by the supervisor.

17.4.6 In establishing a minimum bound on the MCR below which no insurer is regarded to be viable to operate effectively, the supervisor may, for example, apply a market-wide nominal floor to the regulatory capital requirements, based on the need for an insurer to operate with a certain minimal critical mass and consideration of what may be required to meet minimum standards of governance and risk management. Such a nominal floor might vary between lines of business or type of insurer and is particularly relevant in the context of a new insurer or line of business.

17.4.7 Regulatory capital requirements may include additional solvency control levels between the level at which the supervisor takes no intervention action from a capital perspective and the strongest intervention point (that is, between the PCR and MCR levels). These control levels may be set at levels that correspond to a range of different intervention actions that may be taken by the supervisor itself or actions which the supervisor would require of the insurer according to the severity or level of concern regarding adequacy of the capital held by the insurer. These additional control levels may be formally established by the supervisor with explicit intervention actions linked to particular control levels. Alternatively, these additional control levels may be structured less formally, with a range of possible intervention actions available to the supervisor depending on the particular circumstances. In either case the possible triggers and

14 Note that this does not preclude such actions being taken by the supervisor for other reasons, and even if the MCR is met or exceeded.

15 The term “internal model” refers to “a risk measurement system developed by an insurer to analyse its overall risk position, to quantify risks and to determine the economic capital required to meet those risks”. Internal models may also include partial models which capture a subset of the risks borne by the insurer using an internally developed measurement system which is used in determining the insurer's economic capital. The IAIS is aware that insurers use a variety of terms to describe their risk and capital assessment processes, such as “economic capital model”, “risk-based capital model”, or “business model”. The IAIS considers that such terms could be used interchangeably to describe the processes adopted by insurers in the management of risk and capital within their business on an economic basis. For the purposes of consistency, the term “internal model” is used throughout.

16 In this context, a market-wide nominal floor may, for example, be an absolute monetary minimum amount of capital required to be held by an insurer in a jurisdiction.
range of intervention actions should be appropriately disclosed by the supervisor.

17.4.8 Possible intervention actions include:

- measures that are intended to enable the supervisor to better assess and/or control the situation, either formally or informally, such as increased supervision activity or reporting, or requiring auditors or actuaries to undertake an independent review or extend the scope of their examinations;
- measures to address capital levels such as requesting capital and business plans for restoration of capital resources to required levels, limitations on redemption or repurchase of equity or other instruments and/or dividend payments;
- measures intended to protect policyholders pending strengthening of the insurer’s capital position, such as restrictions on licences, premium volumes, investments, types of business, acquisitions, reinsurance arrangements;
- measures that strengthen or replace the insurer’s management and/or risk management framework and overall governance processes;
- measures that reduce or mitigate risks (and hence required capital) such as requesting reinsurance, hedging and other mechanisms; and/or
- refusing, or imposing conditions on, applications submitted for regulatory approval such as acquisitions or growth in business.

17.4.9 In establishing the respective control levels, consideration should be had for these possibilities and the scope for an insurer with capital at this level to be able to increase its capital resources or to be able to access appropriate risk mitigation tools from the market.

Figure 17.2 below illustrates the concept of solvency control levels in the context of establishing regulatory capital requirements:
17.5 In the context of group-wide capital adequacy assessment, the regulatory capital requirements establish solvency control levels that are appropriate in the context of the approach to group-wide capital adequacy that is applied.

17.5.1 The supervisor should establish solvency control levels that are appropriate in the context of the approach that is adopted for group-wide capital adequacy assessment. The supervisor should also define the relationship between these solvency control levels and those at legal entity level for insurers that are members of the group. The design of solvency control levels depends on a number of factors. These include the supervisory perspective, i.e. the relative weight placed on group-wide supervision and legal entity supervision, and the organisational perspective, i.e. the extent to which a group is considered as a set of interdependent entities or a single integrated entity. The solvency control levels are likely to vary according to the particular group and the supervisors involved. (see Figure 17.1). The establishment of group-wide solvency control levels should be such as to enhance the overall supervision of the insurers in the group.

17.5.2 Having group-wide solvency control levels does not necessarily mean establishing a single regulatory capital requirement at group level. For example, under a legal entity approach consideration of the set of capital...
requirements for individual entities (and interrelationships between them) may enable appropriate decisions to be taken about supervisory intervention on a group-wide basis. However, this requires the approach to be sufficiently well developed for group risks to be taken into account on a complete and consistent basis in the capital adequacy assessment of insurance legal entities in a group. To achieve consistency for insurance legal entity assessments, it may be necessary to adjust the capital requirements used for insurance legal entities so they are suitable for group-wide assessment.

17.5.3 One approach may be to establish a single group-wide PCR or a consistent set of PCRs for insurance legal entities that are members of the group which, if met, would mean that no supervisory intervention at group level for capital reasons would be deemed necessary or appropriate. Such an approach may assist, for example, in achieving consistency of approach towards similar organisations with a branch structure and different group structures eg following a change in structure of a group. Where a single group-wide PCR is determined, it may differ from the sum of insurance legal entity PCRs because of group factors including group diversification effects, group risk concentrations and intra-group transactions. Similarly, where group-wide capital adequacy assessment involves the determination of a set of PCRs for the insurance legal entities in an insurance group, these may differ from the insurance legal entity PCRs if group factors are reflected differently in the group capital assessment process. Differences in the level of safety established by different jurisdictions in which the group operates should be considered when establishing group-wide PCR(s).

17.5.4 The establishment of a single group-wide MCR might also be considered and may, for example, trigger supervisory intervention to restructure the control and/or capital of the group. A possible advantage of this approach is that it may encourage a group solution where an individual insurer is in financial difficulty and capital is sufficiently fungible and assets are transferable around the group. Alternatively, the protection provided by the supervisory power to intervene at individual entity level on breach of an insurance legal entity MCR may be regarded as sufficient.

17.5.5 The solvency control levels adopted in the context of group-wide capital adequacy assessment should be designed so that together with the solvency control levels at insurance legal entity level they represent a consistent ladder of supervisory intervention. For example, a group-wide PCR should trigger supervisory intervention before a group-wide MCR because the latter may invoke the supervisor's strongest actions. Also, if a single group-wide PCR is used it may be appropriate for it to have a floor equal to the sum of the legal entity MCRs of the individual entities in the insurance group. Otherwise, no supervisory intervention into the operation of the group would be required even though at least one of its member insurers had breached its MCR.

17.5.6 Supervisory intervention triggered by group-wide solvency control levels should take the form of coordinated action by relevant group supervisors. This may, for example, involve increasing capital at holding company level or strategically reducing the risk profile or increasing capital in insurance legal entities within the group. Such supervisory action may
be exercised via the insurance legal entities within a group and, where insurance holding companies are authorised, via those holding companies. Supervisory action in response to breaches of group-wide solvency control levels should not alter the existing division of statutory responsibilities of the supervisors responsible for authorising and supervising each individual insurance legal entity.

Structure of regulatory capital requirements - approaches to determining regulatory capital requirements

17.6 The regulatory capital requirements are established in an open and transparent process, and the objectives of the regulatory capital requirements and the bases on which they are determined are explicit. In determining regulatory capital requirements, the supervisor allows a set of standardised and, if appropriate, other approved more tailored approaches such as the use of (partial or full) internal models.

17.6.1 Transparency as to the regulatory capital requirements that apply is required to facilitate effective solvency assessment and supports its enhancement, comparability and convergence internationally.

17.6.2 The supervisor may develop separate approaches for the determination of different regulatory capital requirements, in particular for the determination of the MCR and the PCR. For example, the PCR and MCR may be determined by two separate methods, or the same methods and approaches may be used but with two different levels of safety specified. In the latter case, for example, the MCR may be defined as a simple proportion of the PCR, or the MCR may be determined on different specified target criteria to those specified for the PCR.

17.6.3 The PCR would generally be determined on a going concern basis, ie in the context of the insurer continuing its operations. On a going concern basis, an insurer would be expected to continue to take on new risks during the established time horizon. Therefore, in establishing the regulatory capital level to provide an acceptable level of solvency, the potential growth in an insurer’s portfolio should be considered.

17.6.4 Capital should also be capable of protecting policyholders if the insurer were to close to new business. Generally, the determination of capital on a going concern basis would not be expected to be less than would be required if it is assumed that the insurer were to close to new business. However, this may not be true in all cases, since some assets may lose some or all of their value in the event of a winding-up or run-off, for example, because of a forced sale. Similarly, some liabilities may actually have an increased value if the business does not continue (eg claims handling expenses).

17.6.5 Usually the MCR would be constructed taking into consideration the possibility of closure to new business. It is, however, relevant to also consider the going concern scenario in the context of establishing the level of the MCR, as an insurer may continue to take on new risks up until the point at which MCR intervention is ultimately triggered. The supervisor should consider the appropriate relationship between the PCR and MCR, establishing a sufficient buffer between these two levels (including consideration of the basis on which the MCR is generated) within an appropriate continuum of solvency control levels, having regard
for the different situations of business operation and other relevant considerations.

17.6.6 It should be emphasised that meeting the regulatory capital requirements should not be taken to imply that further financial injections will not be necessary under any circumstances in future.

17.6.7 Regulatory capital requirements may be determined using a range of approaches, such as standard formulae, or other approaches, more tailored to the individual insurer (such as partial or full internal models), which are subject to approval by the relevant supervisors. Regardless of the approach used, the principles and concepts that underpin the objectives for regulatory capital requirements described in this ICP apply and should be applied consistently by the supervisor to the various approaches. The approach adopted for determining regulatory capital requirements should take account of the nature and materiality of the risks insurers face generally and, to the extent practicable, should also reflect the nature, scale and complexity of the risks of the particular insurer.

17.6.8 Standardised approaches, in particular, should be designed to deliver capital requirements which reasonably reflect the overall risk to which insurers are exposed, while not being unduly complex. Standardised approaches may differ in level of complexity depending on the risks covered and the extent to which they are mitigated or may differ in application based on classes of business (e.g., life and non-life). Standardised approaches should be appropriate to the nature, scale and complexity of the risks that insurers face and should include approaches that are feasible in practice for insurers of all types including small and medium sized insurers and captives taking into account the technical capacity that insurers need to manage their businesses effectively.

17.6.9 By its very nature a standardised approach may not be able to fully and appropriately reflect the risk profile of each individual insurer. Therefore, where appropriate, a supervisor should allow the use of more tailored approaches subject to approval. In particular, where an insurer has an internal model (or partial internal model) that appropriately reflects its risks and is integrated into its risk management and reporting, the supervisor should allow the use of such a model to determine more tailored regulatory capital requirements, where appropriate. The use of the internal model for this purpose would be subject to prior approval by the supervisor based on a transparent set of criteria and would need to be evaluated at regular intervals. In particular, the supervisor would need to be satisfied that the insurer’s internal model is, and remains, appropriately calibrated relative to the target criteria established by the supervisor (see Guidance 17.12.1 to 17.12.18).

17.6.10 The supervisor should also be clear on whether an internal model may be used for the determination of the MCR. In this regard, the supervisor

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17 A more tailored approach which is not an internal model might include, for example, approved variations in factors contained in a standard formula or prescribed scenario tests which are appropriate for a particular insurer or group of insurers.

18 It is noted that the capacity for a supervisor to allow the use of internal models will need to take account of the sufficiency of resources available to the supervisor.
should take into account the main objective of the MCR (ie to provide the ultimate safety net for the protection of policyholders) and the ability of the MCR to be defined in a sufficiently objective and appropriate manner to be enforceable (refer to Guidance 17.3.4).

17.7 The supervisor addresses all relevant and material categories of risk in insurers and is explicit as to where risks are addressed, whether solely in technical provisions, solely in regulatory capital requirements or if addressed in both, as to the extent to which the risks are addressed in each. The supervisor is also explicit as to how risks and their aggregation are reflected in regulatory capital requirements.

Types of risks to be addressed

17.7.1 The supervisor should address all relevant and material categories of risk - including at least underwriting risk, credit risk, market risk, operational risk and liquidity risk. This should include any significant risk concentrations, for example, to economic risk factors, market sectors or individual counterparties, taking into account both direct and indirect exposures and the potential for exposures in related areas to become more correlated under stressed circumstances.

Dependencies and interrelations between risks

17.7.2 The assessment of the overall risk that an insurer is exposed to should address the dependencies and interrelationships between risk categories (for example, between underwriting risk and market risk) as well as within a risk category (for example, between equity risk and interest rate risk). This should include an assessment of potential reinforcing effects between different risk types as well as potential “second order effects”, ie indirect effects to an insurer’s exposure caused by an adverse event or a change in economic or financial market conditions. It should also consider that dependencies between different risks may vary as general market conditions change and may significantly increase during periods of stress or when extreme events occur. “Wrong way risk”, which is defined as the risk that occurs when exposure to counterparties, such as financial guarantors, is adversely correlated to the credit quality of those counterparties, should also be considered as a potential source of significant loss eg in connection with derivative transactions. Where the determination of an overall capital requirement takes into account diversification effects between different risk types, the insurer should be able to explain the allowance for these effects and ensure that it considers how dependencies may increase under stressed circumstances.

Allowance for risk mitigation

17.7.3 Any allowance for reinsurance in determining regulatory capital requirements should consider the possibility of breakdown in the effectiveness of the risk transfer and the security of the reinsurance counterparty and any measures used to reduce the reinsurance

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19 For example, a change in the market level of interest rates could trigger an increase of lapse rates on insurance policies.
counterparty exposure. Similar considerations would also apply for other risk mitigants, for example derivatives.

**Transparency of recognition of risks in regulatory requirements**

17.7.4 The supervisor should be explicit as to where risks are addressed, whether solely in technical provisions, solely in regulatory capital requirements or if addressed in both, as to the extent to which the risks are addressed in each. The solvency requirements should also clearly articulate how risks are reflected in regulatory capital requirements, specifying and publishing the level of safety to be applied in determining regulatory capital requirements, including the established target criteria (refer to Standard 17.8).

**Treatment of risks which are difficult to quantify**

17.7.5 The IAIS recognises that some risks, such as strategic risk, reputational risk, liquidity risk and operational risk, are less readily quantifiable than the other main categories of risks. Operational risk, for example, is diverse in its composition and depends on the quality of systems and controls in place. The measurement of operational risk, in particular, may suffer from a lack of sufficiently uniform and robust data and well developed valuation methods. Jurisdictions may choose to base regulatory capital requirements for these less readily quantifiable risks on some simple proxies for risk exposure and/or stress and scenario testing. For particular risks (such as liquidity risk), holding additional capital may not be the most appropriate risk mitigant and it may be more appropriate for the supervisor to require the insurer to control these risks via exposure limits and/or qualitative requirements such as additional systems and controls.

17.7.6 However, the IAIS envisages that the ability to quantify some risks (such as operational risk) will improve over time as more data become available or improved valuation methods and modelling approaches are developed. Further, although it may be difficult to quantify risks, it is important that an insurer nevertheless addresses all material risks in its own risk and solvency assessment.

17.8 The supervisor sets appropriate target criteria for the calculation of regulatory capital requirements, which underlie the calibration of a standardised approach. Where the supervisor allows the use of approved more tailored approaches such as internal models for the purpose of determining regulatory capital requirements, the target criteria underlying the calibration of the standardised approach are also used by those approaches for that purpose to require broad consistency among all insurers within the jurisdiction.

17.8.1 The level at which regulatory capital requirements are set will reflect the risk tolerance of the supervisor. Reflecting the IAIS’s principles-based approach, this ICP does not prescribe any specific methods for determining regulatory capital requirements. However, the IAIS’s view is that it is important that individual jurisdictions set appropriate target criteria (such as risk measures, confidence levels or time horizons) for their regulatory capital requirements. Further, each jurisdiction should outline clear principles for the key concepts for determining regulatory capital requirements, considering the factors that a supervisor should
take into account in determining the relevant parameters as outlined in this ICP.

17.8.2 Where a supervisor allows the use of other more tailored approaches to determine regulatory capital requirements, the target criteria established should be applied consistently to those approaches. In particular, where a supervisor allows the use of internal models for the determination of regulatory capital requirements, the supervisor should apply the target criteria in approving the use of an internal model by an insurer for that purpose. This should achieve broad consistency among all insurers and a similar level of protection for all policyholders, within the jurisdiction.

17.8.3 With regards to the choice of the risk measure and confidence level to which regulatory capital requirements are calibrated, the IAIS notes that some supervisors have set a confidence level for regulatory purposes which is comparable with a minimum investment grade level. Some examples have included a 99.5% VaR calibrated confidence level over a one year timeframe,20 99% TVaR over one year and 95% TVaR over the term of the policy obligations.

17.8.4 In regards to the choice of an appropriate time horizon, the determination and calibration of the regulatory capital requirements needs to be based on a more precise analysis, distinguishing between:

- the period over which a shock is applied to a risk – the “shock period”; and
- the period over which the shock that is applied to a risk will impact the insurer – the “effect horizon”.

17.8.5 For example, a one-off shift in the interest rate term structure during a shock period of one year has consequences for the discounting of the cash flows over the full term of the policy obligations (the effect horizon). A judicial opinion (eg on an appropriate level of compensation) in one year (the shock period) may have permanent consequences for the value of claims and hence will change the projected cash flows to be considered over the full term of the policy obligations (the effect horizon).

17.8.6 The impact on cash flows of each stress that is assumed to occur during the shock period will need to be calculated over the period for which the shock will affect the relevant cash flows (the effect horizon). In many cases this will be the full term of the insurance obligations. In some cases, realistic allowance for offsetting reductions in discretionary benefits to policyholders or other offsetting management actions may be considered, where they could and would be made and would be effective in reducing policy obligations or in reducing risks in the circumstances of the stress. In essence, at the end of the shock period, capital has to be sufficient so that assets cover the technical provisions (and other liabilities) re-determined at the end of the shock period. The re-determination of the technical provisions would allow for the impact of

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20 This is the level expected in Australia for those insurers that seek approval to use an internal model to determine their MCR. It is also the level used for the calculation of the risk-based Solvency Capital Requirement under the European Solvency II regime.
the shock on the technical provisions over the full time horizon of the policy obligations.

17.8.7 Figure 17.3 summarises key aspects relevant to the determination of regulatory capital requirements:

Figure 17.3: Illustration of determination of regulatory capital requirements

Valuation date

Financial position

Risk impact

17.8.8 For the determination of the technical provisions, an insurer is expected to consider the uncertainty attached to the policy obligations, that is, the likely (or expected) variation of future experience from what is assumed in determining the current estimate, over the full period of the policy obligations. As indicated above, regulatory capital requirements should be calibrated such that assets exceed the technical provisions (and other liabilities) over a defined shock period with an appropriately high degree of safety. That is, the regulatory capital requirements should be set such that the insurer’s capital resources can withstand a range of predefined shocks or stress scenarios that are assumed to occur during that shock period (and which lead to significant unexpected losses over and above the expected losses that are captured in the technical provisions).

Calibration and measurement error

17.8.9 The risk of measurement error inherent in any approach used to determine capital requirements should be considered. This is especially important where there is a lack of sufficient statistical data or market information to assess the tail of the underlying risk distribution. To mitigate model error, quantitative risk calculations should be blended with qualitative assessments, and, where practicable, multiple risk measurement tools should be used. To help assess the economic appropriateness of risk-based capital requirements, information should be sought on the nature, degree and sources of the uncertainty.
surrounding the determination of capital requirements in relation to the established target criteria.

17.8.10 The degree of measurement error inherent, in particular, in a standardized approach depends on the degree of sophistication and granularity of the methodology used. A more sophisticated standardized approach has the potential to be aligned more closely to the true distribution of risks across insurers. However, increasing the sophistication of the standardized approach is likely to imply higher compliance costs for insurers and more intensive use of supervisory resources (for example, in validating the calculations). The calibration of the standardized approach therefore needs to balance the trade-off between risk-sensitivity and implementation costs.

Procyclicality

17.8.11 When applying risk-based regulatory capital requirements, there is a risk that an economic downturn will trigger supervisory interventions that exacerbate the economic crises, thus leading to an adverse "procyclical" effect. For example, a severe downturn in share markets may result in a depletion of the capital resources of a major proportion of insurers. This in turn may force insurers to sell shares and to invest in less risky assets in order to decrease their regulatory capital requirements. A simultaneous massive selling of shares by insurers could, however, put further pressure on the share markets, thus leading to a further drop in share prices and to a worsening of the economic crises.

17.8.12 However, the system of solvency control levels required enables supervisors to introduce a more principles-based choice of supervisory interventions in cases where there may be a violation of the PCR control level and this can assist in avoiding exacerbation of procyclicality effects: supervisory intervention is able to be targeted and more flexible in the context of an overall economic downturn so as to avoid measures that may have adverse macroeconomic effects.

17.8.13 It could be contemplated whether further explicit procyclicality-dampening measures would be needed. This may include allowing a longer period for corrective measures or allowance for the calibration of the regulatory capital requirements to reflect procyclicality dampening measures. Overall, when such dampening measures are applied, an appropriate balance needs to be achieved to preserve the risk sensitivity of the regulatory capital requirements.

17.8.14 In considering the impacts of procyclicality, the influence of external factors (for example, the influence of credit rating agencies) should be given due regard. The impacts of procyclicality also heighten the need for supervisory cooperation and communication.

Additional guidance for insurance groups and insurance legal entities that are members of groups

17.8.15 Approaches to determining group-wide regulatory capital requirements will depend on the overall approach taken to group-wide capital adequacy assessment. Where a group level approach is used, either the group’s consolidated accounts may be taken as a basis for calculating group-wide capital requirements or the requirements of each insurance
legal entity may be aggregated or a mixture of these methods may be used. For example, if a different treatment is required for a particular entity (for example, an entity located in a different jurisdiction) it might be disaggregated from the consolidated accounts and then included in an appropriate way using a deduction and aggregation approach.

17.8.16 Where consolidated accounts are used, the requirements of the jurisdiction in which the ultimate parent of the group is located would normally be applied, consideration should also be given to the scope of the consolidated accounts used for accounting purposes as compared to the consolidated balance sheet used as a basis for group-wide capital adequacy assessment to require, for example, identification and appropriate treatment of non-insurance group entities.

17.8.17 Where the aggregation method is used (as described in Guidance 17.1.13), or where a legal entity focus is adopted (as described in Guidance 17.1.14), consideration should be given as to whether local capital requirements can be used for insurance legal entities within the group which are located in other jurisdictions or whether capital requirements should be recalculated according to the requirements of the jurisdiction in which the ultimate parent of the group is located.

Group-specific risks

17.8.18 There are a number of group-specific factors which should be taken into account in determining group-wide capital requirements including diversification of risk across group entities, intra-group transactions, risks arising from non-insurance group entities, treatment of group entities located in other jurisdictions and treatment of partially-owned entities and minority interests. Particular concerns may arise from a continuous sequence of internal financing within the group, or closed loops in the financing scheme of the group.

17.8.19 Group specific risks posed by each group entity to insurance members of the group and to the group as a whole are a key factor in an overall assessment of group-wide capital adequacy. Such risks are typically difficult to measure and mitigate and include notably contagion risk (financial, reputational, legal), concentration risk, complexity risk and operational/organisational risks. As groups can differ significantly it may not be possible to address these risks adequately using a standardised approach for capital requirements. It may therefore be necessary to address group specific risks through the use of more tailored approaches to capital requirements including the use of (partial or full) internal models. Alternatively, supervisors may vary the standardised regulatory capital requirement so that group-specific risks are adequately provided for in the insurance legal entity and/or group capital adequacy assessment.21

17.8.20 Group specific risks should be addressed from both an insurance legal entity perspective and group-wide perspective ensuring that adequate allowance is made. Consideration should be given to the potential for duplication or gaps between insurance legal entity and group-wide approaches.

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21 See Standard 17.9.
Diversification of risks between group entities

17.8.21 In the context of a group-wide solvency assessment, there should also be consideration of dependencies and interrelations of risks across different members in the group. However, it does not follow that where diversification effects exist these should be recognised automatically in an assessment of group-wide capital adequacy. It may, for example, be appropriate to limit the extent to which group diversification effects are taken into account for the following reasons:

- Diversification may be difficult to measure at any time and in particular in times of stress. Appropriate aggregation of risks is critical to the proper evaluation of such benefits for solvency purposes.
- There may be constraints on the transfer of diversification benefits across group entities and jurisdictions because of a lack of fungibility of capital or transferability of assets.
- Diversification may be offset by concentration/aggregation effects (if this is not separately addressed in the assessment of group capital).

17.8.22 An assessment of group diversification benefits is necessary under whichever approach used to assess group-wide capital adequacy. Under a legal entity approach, recognition of diversification benefits will require consideration of the diversification between the business of an insurance legal entity and other entities within the group in which it participates and of intra-group transactions. Under an approach with a consolidation focus which uses the consolidated accounts method, some diversification benefits will be recognised automatically at the level of the consolidated group. In this case, supervisors will need to consider whether it is prudent to recognise such benefits or whether an adjustment should be made in respect of potential restrictions on the transferability or sustainability under stress of surplus resources created by group diversification benefits.

Intra-group transactions

17.8.23 Intra-group transactions may result in complex and/or opaque intra-group relationships which give rise to increased risks at both insurance legal entity and group level. In a group-wide context, credit for risk mitigation should only be recognised in group capital requirements to the extent that risk is transferred outside the group. For example, the transfer of risk to a captive reinsurer or to an intra-group insurance special purpose entity should not result in a reduction of overall group capital requirements.

Non-insurance group entities

17.8.24 In addition to insurance legal entities, an insurance group may include a range of different types of non-insurance legal entity, either subject to no financial regulation (non-regulated entities) or regulated under other financial sector regulation. The impact of all such entities should be taken into account in the overall assessment of group-wide solvency but the extent to which they can be captured in a group-wide capital adequacy measure as such will vary according to the type of non-insurance legal
entity, the degree of control/influence on that entity and the approach taken to group-wide supervision.

17.8.25 Risks from non-regulated entities are typically difficult to measure and mitigate. Supervisors may not have direct access to information on such entities but it is important that supervisors are able to assess the risks they pose in order to apply appropriate mitigation measures. Measures taken to address risks from non-regulated entities do not imply active supervision of such entities.

17.8.26 There are different approaches to addressing risks stemming from non-regulated entities such as capital measures, non-capital measures or a combination thereof.

17.8.27 One approach may be to increase capital requirements in order that the group holds sufficient capital. If the activities of the non-regulated entities have similar risk characteristics to insurance activities (eg certain credit enhancement mechanisms as compared to traditional bond insurance) it may be possible to calculate an equivalent capital charge. Another approach might be to deduct the value of holdings in non-regulated entities from the capital resources of the insurance legal entities in the group, but this on its own may not be sufficient to cover the risks involved.

17.8.28 Non-capital measures may include, for example, limits on exposures and requirements on risk management and governance applied to insurance legal entities with respect to non-regulated entities within the group.

**Cross-jurisdictional entities**

17.8.29 Group-wide capital adequacy assessments should, to the extent possible, be based on consistent application of ICPs across jurisdictions. In addition, consideration should be given to the capital adequacy and transferability of assets in entities located in different jurisdictions.

**Partial ownership and minority interests**

17.8.30 An assessment of group-wide capital adequacy should include an appropriate treatment of partially-owned or controlled group entities and minority interests. Such treatment should take into account the nature of the relationships of the partially-owned entities within the group and the risks and opportunities they bring to the group. The accounting treatment may provide a starting point. Consideration should be given to the availability of any minority interest’s share in the net equity in excess of regulatory capital requirements of a partially-owned entity.

**Variation of regulatory capital requirements**

17.9 Any variations to the regulatory capital requirement imposed by the supervisor are made within a transparent framework, are appropriate to the nature, scale and complexity according to the target criteria and are only expected to be required in limited circumstances.

17.9.1 As has already been noted, a standardised approach, by its very nature, may not be able to fully and appropriately reflect the risk profile of each individual insurer. In cases where the standardised approach established for determining regulatory capital requirements is materially inappropriate for the risk profile of the insurer, the supervisor should have the flexibility to increase the regulatory capital requirement calculated by
the standard approach. For example, some insurers using the standard formula may warrant a higher PCR and/or group-wide regulatory capital requirement if they are undertaking higher risks, such as new products where credible experience is not available to establish technical provisions, or if they are undertaking significant risks that are not specifically covered by the regulatory capital requirements.

17.9.2 Similarly, in some circumstances when an approved more tailored approach is used for regulatory capital purposes, it may be appropriate for the supervisor to have some flexibility to increase the capital requirement calculated using that approach. In particular, where an internal model or partial internal model is used for regulatory capital purposes, the supervisor may increase the capital requirement where it considers the internal model does not adequately capture certain risks, until the identified weaknesses have been addressed. This may arise, for example, even though the model has been approved where there has been a change in the business of the insurer and there has been insufficient time to fully reflect this change in the model and for a new model to be approved by the supervisor.

17.9.3 In addition, supervisory requirements may be designed to allow the supervisor to decrease the regulatory capital requirement for an individual insurer where the standardised requirement materially overestimates the capital required according to the target criteria. However, such an approach may require a more intensive use of supervisory resources due to requests from insurers for consideration of a decrease in their regulatory capital requirement. Therefore, the IAIS appreciates that not all jurisdictions may wish to include such an option for their supervisor. Further, this reinforces the need for such variations in regulatory capital requirements to only be expected to be made in limited circumstances.

17.9.4 Any variations made by the supervisor to the regulatory capital requirement calculated by the insurer should be made in a transparent framework and be appropriate to the nature, scale and complexity in terms of the target criteria. The supervisor may, for example, develop criteria to be applied in determining such variations and appropriate discussions between the supervisor and the insurer may occur. Variations in regulatory capital requirements following supervisory review from those calculated using standardised approaches or approved more tailored approaches should be expected to be made only in limited circumstances.

17.9.5 In undertaking its ORSA, the insurer considers the extent to which the regulatory capital requirements (in particular, any standardised formula) adequately reflect its particular risk profile. In this regard, the ORSA undertaken by an insurer can be a useful source of information to the supervisor in reviewing the adequacy of the regulatory capital requirements of the insurer and in assessing the need for variation in those requirements.

Identification of capital resources potentially available for solvency purposes

17.10 The supervisor defines the approach to determining the capital resources eligible to meet regulatory capital requirements and their value, consistent
with a total balance sheet approach for solvency assessment and having regard to the quality and suitability of capital elements.

17.10.1 The following outlines a number of approaches a supervisor could use for the determination of capital resources in line with this requirement. The determination of capital resources would generally require the following steps:

- the amount of capital resources potentially available for solvency purposes is identified (see Guidance 17.10.3 - 17.10.21);
- an assessment of the quality and suitability of the capital instruments comprising the total amount of capital resources identified is then carried out (see Guidance 17.11.1 - 17.11.29); and
- on the basis of this assessment, the final capital resources eligible to meet regulatory capital requirements and their value are determined (see Guidance 17.11.30 - 17.11.44).

17.10.2 In addition, the insurer is required to carry out its own assessment of its capital resources to meet regulatory capital requirements and any additional capital needs (see Standard 16.14).

**Capital resources under total balance sheet approach**

17.10.3 The IAIS supports the use of a total balance sheet approach in the assessment of solvency to recognise the interdependence between assets, liabilities, regulatory capital requirements and capital resources so that risks are appropriately recognised.

17.10.4 Such an approach requires that the determination of available and required capital is based on consistent assumptions for the recognition and valuation of assets and liabilities for solvency purposes.

17.10.5 From a regulatory perspective, the purpose of regulatory capital requirements is to require that, in adversity, an insurer’s obligations to policyholders will continue to be met as they fall due. This aim will be achieved if technical provisions and other liabilities are expected to remain covered by assets over a defined period, to a specified level of safety.\(^{22}\)

17.10.6 To achieve consistency with this economic approach to setting capital requirements in the context of a total balance sheet approach, capital resources should broadly be regarded as the difference between assets and liabilities on the basis of their recognition and valuation for solvency purposes.

\(^{22}\) Refer to Guidance 17.3.1 - 17.9.5.
17.10.7 When regarding available capital resources as the difference between assets and liabilities, the following issues should be considered:

- the extent to which certain liabilities other than technical provisions may be treated as capital for solvency purposes (Guidance 17.10.8 - 17.10.10);
- whether contingent assets could be included (Guidance 17.10.11);
- the treatment of assets which may not be fully realisable in the normal course of business or under a wind-up scenario (Guidance 17.10.12 - 17.10.19); and
- reconciliation of such a “top down” approach to determining capital resources with a “bottom up” approach which sums up individual items of capital to derive the overall amount of capital resources (Guidance 17.10.20).

### Treatment of liabilities

17.10.8 Liabilities include technical provisions and other liabilities. Certain items such as other liabilities in the balance sheet may be treated as capital resources for solvency purposes.

17.10.9 For example, perpetual subordinated debt, although usually classified as a liability under the relevant accounting standards, could be classified as
a capital resource for solvency purposes.\textsuperscript{23} This is because of its availability to act as a buffer to reduce the loss to policyholders and senior creditors through subordination in the event of insolvency. More generally, subordinated debt instruments (whether perpetual or not) may be treated as capital resources for solvency purposes if they satisfy the criteria established by the supervisor. Other liabilities that are not subordinated would not be considered as part of the capital resources; examples include liabilities such as deferred tax liabilities and pension liabilities.

17.10.10 It may, therefore, be appropriate to exclude some elements of funding from liabilities and so include them in capital to the extent appropriate. This would be appropriate if these elements have characteristics which protect policyholders by meeting one or both of the objectives set out in Guidance 17.2.6 above.

Treatments of contingent assets

17.10.11 It may be appropriate to include contingent elements which are not considered as assets under the relevant accounting standards, where the likelihood of payment if needed is sufficiently high according to criteria specified by the supervisor. Such contingent capital may include, for example, letters of credit, members’ calls by a mutual insurer or the unpaid element of partly paid capital and may be subject to prior approval by the supervisor.

Treatments of assets which may not be fully realisable on a going concern or wind-up basis

17.10.12 Supervisors should consider that, for certain assets in the balance sheet, the realisable value under a wind-up scenario may become significantly lower than the economic value which is attributable under going concern conditions. Similarly, even under normal business conditions, some assets may not be realisable at full economic value, or at any value, at the time they are needed. This may render such assets unsuitable for inclusion at their full economic value for the purpose of meeting required capital.\textsuperscript{24}

17.10.13 Examples of such assets include:

- own shares directly held by the insurer: the insurer has bought and is holding its own shares thereby reducing the amount of capital available to absorb losses under going concern or in a wind-up scenario;
- intangible assets: their realisable value may be uncertain even during normal business conditions and may have no significant marketable value in run-off or winding-up; Goodwill is a common example;

\textsuperscript{23} However, adequate recognition should be given to contractual features of the debt such as embedded options which may change its loss absorbency.

\textsuperscript{24} In particular, supervisors should consider the value of contingent assets for solvency purposes taking into account the criteria set out in Guidance 17.11.21.
• future income tax credits: such credits may only be realisable if there are future taxable profits, which is improbable in the event of insolvency or winding-up;

• implicit accounting assets: under some accounting models, certain items regarding future income are included, implicitly or explicitly, as asset values. In the event of run-off or winding-up, such future income may be reduced;

• investments\textsuperscript{25} in other insurers or financial institutions: such investments may have uncertain realisable value because of contagion risk between entities; also there is the risk of “double gearing” where such investments lead to a recognition of the same amount of available capital resources in several financial entities; and

• company-related assets: certain assets carried in the accounting statements of the insurer could lose some of their value in the event of run-off or winding-up, for example physical assets used by the insurer in conducting its business which may reduce in value if there is a need for the forced sale of such assets. Also, certain assets may not be fully accessible to the insurer eg surplus in a corporate pension arrangement.

17.10.14 The treatment of such assets for capital adequacy purposes may need to reflect an adjustment to its economic value. Generally, such an adjustment may be effected either:

• directly, by not admitting a portion of the economic value of the asset for solvency purposes (deduction approach); or

• indirectly, through an addition to regulatory capital requirements (capital charge approach).

\textit{Deduction approach}

17.10.15 Under the deduction approach, the economic value of the asset is reduced for solvency purposes. This results in capital resources being reduced by the same amount. The partial (or full) exclusion of such an asset may occur for a variety of reasons, for example, to reflect an expectation that it would have only limited value in the event of insolvency or winding-up to absorb losses. No further adjustment would normally be needed in the determination of regulatory capital requirements for the risk of holding such assets.

\textit{Capital charge approach}

17.10.16 Under the capital charge approach, an economic value is placed on the asset for the purpose of determining available capital resources. The risk associated with the asset – ie a potential deterioration of the economic value of the asset due to an adverse event which may occur during the defined solvency time horizon - would then need to be reflected in the determination of regulatory capital requirements. This

\textsuperscript{25} These investments include investment in the equity of, loans granted to, deposits with and bonds issued by the related parties.
should take into account the estimation uncertainty\textsuperscript{26} inherent in the determination of the economic value.

**Choice and combination of approaches**

17.10.17 As outlined above, an application of the deduction approach would lead to a reduction in the amount of available capital resources, whereas an application of the capital charge approach would result in an increase in regulatory capital requirements. Provided the two approaches are based on a consistent economic assessment of the risk associated with the relevant assets, they would be expected to produce broadly similar results regarding the overall assessment of the solvency position of the insurer.

17.10.18 For some asset classes, it may be difficult to determine a sufficiently reliable economic value or to assess the associated risks. Such difficulties may also arise where there is a high concentration of exposure to a particular asset or type of assets or to a particular counterparty or group of counterparties.

17.10.19 A supervisor should choose the approach which is best suited to the organisation and sophistication of the insurance sector and the nature of the asset class and asset exposure considered. It may also combine different approaches for different classes of assets. Whatever approach is chosen, it should be transparent and consistently applied. It is also important that any material double counting or omission of risks under the calculations for determining the amounts of required and available regulatory capital is avoided.

**Reconciliation of approaches**

17.10.20 The approach to determining available capital resources as broadly the amount of assets over liabilities (with the potential adjustments as discussed above) may be described as a “top-down” approach - i.e., starting with the high level capital as reported in the balance sheet and adjusting it in the context of the relevant solvency control level. An alternative approach which is also applied in practice is to sum up the amounts of particular items of capital which are specified as being acceptable. Such a “bottom-up” approach should be reconcilable to the “top-down” approach on the basis that the allowable capital items under the “bottom-up approach” should ordinarily include all items which contribute to the excess of assets over liabilities in the balance sheet, with the addition or exclusion of items as per the discussion in Guidance 17.10.8 - 17.10.19.

**Other considerations**

17.10.21 A number of factors may be considered by the supervisor in identifying what may be regarded as capital resources for solvency purposes, including the following:

\textsuperscript{26} This refers to the degree of inaccuracy and imprecision in the determination of the economic value where observable values are not available, and estimation methodologies need to be applied. Sources for this estimation uncertainty are for example the possibility that the assumptions and parameters used in the valuation are incorrect, or that the valuation methodology itself is deficient.
• the way in which the quality of capital resources is addressed by the supervisor, including whether or not quantitative requirements are applied to the composition of capital resources and/or whether or not a categorisation or continuum-based approach is used;

• the coverage of risks in the determination of technical provisions and regulatory capital requirements;

• the assumptions in the valuation of assets and liabilities (including technical provisions) and the determination of regulatory capital requirements, eg going concern basis or wind-up basis, before tax or after tax, etc;

• policyholder priority and status under the legal framework relative to other creditors in the jurisdiction;

• overall quality of risk management and governance frameworks in the insurance sector in the jurisdiction;

• the comprehensiveness and transparency of disclosure frameworks in the jurisdiction and the ability for markets to exercise sufficient scrutiny and impose market discipline;

• the development of the capital market in the jurisdiction and its impact on the ability of insurers to raise capital;

• the balance to be struck between protecting policyholders and the impact on the effective operation of the insurance sector and considerations around unduly onerous levels and costs of regulatory capital requirements;

• the relationship between risks faced by insurers and those faced by other financial services entities, including banks.

Additional guidance for insurance groups and insurance legal entities that are members of groups

17.10.22 The considerations set out in Guidance 17.10.3 - 17.10.21 above apply equally to insurance legal entity and group-wide supervision. The practical application of these considerations will differ according to whether a legal entity focus or a group level focus is taken to group-wide supervision. Whichever approach is taken, key group-wide factors to be addressed in the determination of group-wide capital resources include multiple gearing, intra-group creation of capital and reciprocal financing, leverage of the quality of capital and fungibility of capital and free transferability of assets across group entities. There may be particular concerns where such factors involve less transparent transactions eg because they involve both regulated and non-regulated entities or where there is a continuous sequence of internal financing within the group, or closed loops in the financing of the group.

Criteria for the assessment of the quality and suitability of capital resources

17.11 The supervisor establishes criteria for assessing the quality and suitability of capital resources, having regard to their ability to absorb losses on both a going concern and wind-up basis.
17.11.1 In view of the two objectives of capital resources set out in Guidance 17.2.6, the following questions need to be considered when establishing criteria to determine the suitability of capital resources for regulatory purposes:

- To what extent can the capital element be used to absorb losses on a going concern basis or in run-off?
- To what extent can the capital element be used to reduce the loss to policyholders in the event of insolvency or winding-up?

17.11.2 Some capital elements are available to absorb losses in all circumstances ie on a going concern basis, in run-off, in winding-up and insolvency. For example, common shareholders' funds (ordinary shares and reserves) allow an insurer to absorb losses on an ongoing basis, are permanently available and rank as the most subordinate instruments in a winding-up. Further, this element of capital best allows insurers to conserve resources when they are under stress because it provides an insurer with full discretion as to the amount and timing of distributions. Consequently, common shareholders' funds are a core element of capital resources for the purpose of solvency assessment.

17.11.3 The extent of loss absorbency of other capital elements can vary considerably. Hence, a supervisor should take a holistic approach to evaluating the extent of loss absorbency overall and should establish criteria that should be applied to evaluate capital elements in this regard, taking into account empirical evidence that capital elements have absorbed losses in practice, where available.

17.11.4 To complement the structure of regulatory capital requirements, the supervisor may choose to vary the criteria for capital resources suitable for covering the different solvency control levels established by the supervisor. Where such an approach is chosen, the criteria relating to capital resources suitable for covering an individual control level should have regard to the supervisory intervention that may arise if the level is breached and the objective of policyholder protection.

17.11.5 For example, considering that the main aim of the MCR is to provide the ultimate safety net for the protection of the interests of policyholders, the supervisor may decide to establish more stringent quality criteria for capital resources suitable to cover the MCR (regarding such resources as a “last line of defence” for the insurer both during normal times and in wind-up) than for capital resources to cover the PCR.

17.11.6 Alternatively, a common set of regulatory criteria for capital resources could be applied at all solvency control levels, with regulatory capital requirements reflecting the different nature of the various solvency control levels.

17.11.7 In assessing the ability of elements of capital to absorb losses, the following characteristics are usually considered:

- the extent to which and in what circumstances the capital element is subordinated to the rights of policyholders in an insolvency or winding-up (subordination);
• The extent to which the capital element is fully paid and available to absorb losses (availability);

• the period for which the capital element is available (permanence); and

• the extent to which the capital element is free from mandatory payments or encumbrances (absence of encumbrances and mandatory servicing costs).

17.11.8 In the first bullet of Guidance 17.11.7 above, this characteristic is inherently linked to the ability of the capital item to absorb losses in the event of insolvency or winding-up. The characteristics of permanence and availability are relevant for loss absorbency under both going concern and winding-up; taken together, they could be described as being able to absorb losses when needed. The fourth characteristic is related to the degree to which the capital is conserved until needed, and in the case of absence of mandatory serving costs is primarily relevant for ensuring loss absorbency on a going concern basis.

17.11.9 The relationship between these characteristics is illustrated below:

Figure 17.5
17.11.10 In the following Guidance, we examine how the characteristics of capital resources described above may be used to establish criteria for an assessment of the quality of capital elements for regulatory purposes. It is recognised that views about the specific characteristics that are acceptable may differ from jurisdiction to jurisdiction and will reflect, amongst other things, the extent to which the pre-conditions for effective supervision exist within the jurisdiction and the risk tolerance of the particular supervisor.

Subordination

17.11.11 To require that a capital element is available to protect policyholders, it must be legally subordinated to the rights of policyholders and senior creditors of the insurer in an insolvency or winding-up. This means that the holder of a capital instrument is not entitled to repayment, dividends or interest once insolvency or winding-up proceedings have been started until all obligations to the insurer’s policyholders have been satisfied.

17.11.12 In addition, there should be no encumbrances that undermine the subordination or render it ineffective. One example of this would be applying rights of offset where creditors are able to set off amounts they owe the insurer against the subordinated capital instrument.\(^{27}\) Further, the instrument should not be guaranteed by either the insurer or another related entity unless it is clear that the guarantee is available subject to the policyholder priority. In some jurisdictions subordination to other creditors may also need to be taken into account.

17.11.13 Each jurisdiction is governed by its own laws regarding insolvency and winding-up. Common equity shareholders normally have the lowest priority in any liquidating distribution of assets, immediately following preferred shareholders. In some jurisdictions, insurers can issue subordinated debt that provides protection to policyholders and creditors in insolvency. While policyholders are often given a legal priority above other creditors such as bondholders, this is not always the case; some jurisdictions rank obligations to bondholders and other creditors equally. Some jurisdictions rank obligations to the government (e.g., taxes) and obligations to employees, ahead of policyholders and other creditors. Where creditors have secured claims, they may rank before policyholders. The determination of suitable capital elements for solvency purposes is critically dependent upon the legal environment of the relevant jurisdiction.

17.11.14 The supervisor should evaluate each potential capital element in the context that its value and suitability, and hence an insurer’s solvency position may change significantly in a wind-up or insolvency scenario. In most jurisdictions the payment priority in a wind-up situation is clearly stated in law.

Availability

17.11.15 In order to satisfy the primary requirement that capital resources are available to absorb unforeseen losses, it is important that capital elements are fully paid.

\(^{27}\) Rights of offset will vary according to the legal environment in a jurisdiction.
17.11.16 However, in some circumstances, a capital element may be paid for “in kind” ie issued for non-cash. The supervisor should define the extent to which payment other than cash is acceptable for a capital element to be treated as fully paid without prior approval by the supervisor and the circumstances where payment for non-cash consideration may be considered as suitable subject to approval by the supervisor. There may, for example, be issues about the valuation of the non-cash components or the interests of parties other than the insurer.

17.11.17 It may also be appropriate to treat certain contingent elements of capital as available capital resources in cases where the probability of payment is expected to be sufficiently high (for example, the unpaid part of partly paid capital, contributions from members of a mutual insurer or letters of credit, see Guidance 17.10.11).

17.11.18 Where a supervisor allows contingent elements of capital to be included in the determination of capital resources, such inclusion would be expected to be subject to meeting specific supervisory requirements or prior supervisory approval. When assessing the appropriateness of inclusion of a contingent element of capital, regard should be had to:

- the ability and willingness of the counterparty concerned to pay the relevant amount;
- the recoverability of the funds, taking into account any conditions which would prevent the item from being successfully paid in or called up; and
- any information on the outcome of past calls which have been made in comparable circumstances by other insurers, which may be used as an indication of future availability.

17.11.19 The availability of capital instruments may also be impaired when capital is not fully fungible within an insurer to cover losses arising from the insurer’s business. Whereas the fungibility of capital and transferability of assets is primarily an issue in the context of group solvency assessment, it may also be relevant for the supervision of an insurer as a legal entity.

17.11.20 For example, this is the case where – as applies to certain forms of with-profit business in life insurance – part of the assets or surplus of the insurer is segregated from the rest of its operations in a ring-fenced fund. In such cases, assets in the fund may only be able to be used to meet obligations to policyholders with respect to which the fund has been established. In these circumstances, the insurer’s available capital resources relating to the ring-fenced fund can only be used to cover losses stemming from risks associated with the fund (until transferred out of that fund) and cannot be transferred to meet the insurer’s other obligations.

**Permanence**

17.11.21 To provide suitable protection for policyholders for solvency purposes, a capital element must be available to protect against losses for a sufficiently long period to ensure that it is available to the insurer when needed. Supervisors may want to determine a minimum period that
capital should be outstanding to be regarded as capital resources for solvency purposes.

17.11.22 When assessing the extent of permanence of a capital element, regard should be had to:

- the duration of the insurer’s obligations to policyholders;\(^{28}\)
- contractual features of the capital instrument which have an effect on the period for which the capital is available, eg lock-in clauses, step-up options or call options;
- any supervisory powers to restrict the redemption of capital resources; and
- the time it might take to replace the capital element on suitable terms as it approaches maturity.

17.11.23 Similarly, if a capital element has no fixed maturity date, the notice required for repayment should be assessed against the same criteria.

17.11.24 It is important to take into account incentives to redeem a capital element prior to its maturity date which may exist in a capital element and may effectively reduce the period for which the capital is available. For example, a capital instrument which features a coupon rate which increases from its initial level at a specified date after issue, may give rise to an expectation that the instrument will be paid back at that future specified date.

**Absence from mandatory servicing requirements or encumbrances**

17.11.25 The extent to which capital elements require servicing in the form of interest payments, shareholder dividend payments and principal repayments should be considered, as it will affect the insurer’s ability to absorb losses on a going concern basis.

17.11.26 Capital elements that have a fixed maturity date may have fixed servicing costs that cannot be waived or deferred before maturity. The presence of such features also affects the insurer’s ability to absorb losses on a going concern basis and may accelerate insolvency if the payment of a servicing cost results in the insurer breaching its regulatory capital requirements.

17.11.27 A further consideration is the extent to which payments to capital providers or redemption of capital elements should be restricted or subject to supervisory approval. For example, the supervisor may have the ability to restrict the payment of dividends or interest and any redemption of capital resources where considered appropriate to preserve the solvency position of the insurer. Insurers may also issue capital instruments for which payments and redemptions are fully discretionary or subject to supervisory approval according to the contractual terms.

17.11.28 Some capital instruments are structured so as to restrict the payment of dividends or interest and any redemption of capital resources where

\(^{28}\) The duration of the insurer’s obligations to policyholders should be assessed on an economic basis rather than strict contractual basis.
an insurer is breaching or near to breaching its regulatory capital requirements and/or is incurring loss. The payment of dividends or interest may also be subordinated to policyholder interests in case of winding-up or insolvency. Such features will contribute to the ability of the capital instrument to absorb losses on a wind-up basis provided that any claims to unpaid dividends or interest are similarly subordinated.

17.11.29 It should also be considered whether the capital elements contain encumbrances which may restrict their ability to absorb losses, such as guarantees of payment to the capital provider or other third parties, hypothecation or any other restrictions or charges which may prevent the insurer from using the capital resource when needed. Where the capital element includes guarantees of payment to the capital provider or other third parties, the priority of that guarantee in relation to policyholders’ rights should be assessed. Encumbrances may also undermine other characteristics such as permanence or availability of capital.

Determination of capital resources to meet regulatory capital requirements

17.11.30 Based on the assessment of the quality of the capital elements comprising the total capital resources potentially available to the insurer, the final capital resources suitable to meet the regulatory capital requirements can be determined.

17.11.31 Capital elements that are fully loss absorbent under both a going concern and a wind-up perspective would generally be allowed to cover any of the different levels of regulatory capital requirements. However, the supervisor may choose to restrict the extent to which the stronger solvency control levels (ie control levels which trigger more severe supervisory interventions) may be covered by lower quality capital resources or to establish minimum levels for the extent to which these stronger requirements should be covered by the highest quality capital resources. In particular, this applies to amounts of capital resources which are intended to cover the MCR.

17.11.32 To determine the amount of an insurer’s capital resources, supervisors may choose a variety of approaches:

- approaches which categorise capital resources into different quality classes (“tiers”) and apply certain limits/restrictions with respect to these tiers (tiering approaches);
- approaches which rank capital elements on the basis of the identified quality characteristics (continuum-based approaches); or
- approaches which do not attempt to categorise or rank capital elements, but apply individual restrictions or charges where necessary.

To accommodate the quality of assets and quality of capital elements, combinations of the above approaches have been widely used in various jurisdictions for solvency purposes for insurance and other financial sectors.

Determination of capital resources to meet regulatory capital requirements - tiering approach
17.11.33 To take into account the quality of capital instruments, a tiering approach is commonly used in many jurisdictions and in other financial sectors. Under a tiering approach, the composition of capital resources is based on the categorisation of elements of capital according to the quality criteria set by the supervisor.

17.11.34 In many jurisdictions, capital elements are categorised into two or three distinct levels of quality when considering criteria for, and limits on, those capital elements for solvency purposes. For example, one broad categorisation may be as follows:29

- Highest quality capital - permanent capital that is fully available to cover losses of the insurer at all times on a going concern and a wind-up basis;
- Medium quality capital - capital that lacks some of the characteristics of highest quality capital, but which provides a degree of loss absorbency during ongoing operations and is subordinated to the rights (and reasonable expectations) of policyholders; and
- Lowest quality capital - capital that provides loss absorbency in insolvency/ winding-up only.

17.11.35 Under a tiering approach, the supervisor would set minimum or upper levels for the extent to which required capital should comprise the various categories or tiers (for example, high, medium, low) of capital elements. Where established, the level may be expressed as a percentage of required capital30 (for example, a minimum level of 50%31 of required capital for high quality capital elements and/or an upper limit for lowest quality capital might be 25% of required regulatory capital). There may also be limits set on the extent to which required capital may be comprised of certain specific types of capital elements (for example, perpetual subordinated loan capital and perpetual cumulative preference share capital may be limited to 50% of required capital.)

17.11.36 What constitutes an adequate minimum or upper level may depend on the nature of the insurance business and how the requirement interacts with the various solvency control levels. A separation into tiers as set out above assumes that all elements of capital can clearly be identified as belonging to one of the specified tiers and that elements falling into an individual tier will all be of the same quality. In reality, such distinctions between elements of capital may not be clear cut and different elements of capital will exhibit the above quality characteristics in varying degrees.

17.11.37 There are two potential policy responses to this fact. One is to set minimum quality thresholds on the characteristics the capital must have to be included in the relevant tier - as long as these thresholds are met for a given element then it can be included in the relevant tier of capital without limit. The other approach is to set minimum quality thresholds for

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29 Capital elements categorised as being of highest quality are often referred to as core capital and lower levels as supplementary capital, or similar.
30 Alternative approaches may also be used in practice, for example, where the levels are expressed as a percentage of available capital.
31 The percentages used may vary for supervisors in different jurisdictions.
limited inclusion in the relevant tier, but to set additional higher quality thresholds for elements to be permitted to be included in that tier without limit. This approach effectively sub-divides the tiers. It permits greater recognition within a given tier for elements of capital which are more likely to fulfil the quality targets specified for that tier.

17.11.38 Where a tiering approach is applied, this should ideally follow the distinction between going concern capital and wind-up capital. Dividing capital into these tiers is an approach that is also used in the context of regulatory capital requirements for the banking sector.

**Determination of capital resources to meet regulatory capital requirements – continuum-based approach**

17.11.39 In other jurisdictions a continuum-based approach may be used in recognising the differential quality of capital elements. Under this approach, elements of capital are not categorised, but rather ranked, relative to other elements of capital on the basis of identified quality characteristics set by the supervisor. The supervisor also defines the minimum acceptable level of quality of capital for solvency purposes and perhaps for different solvency control levels. In this way the capital elements are classified from highest to lowest quality on a continuous basis; only capital elements sitting above this defined minimum level on the continuum, would be accepted as capital resources for solvency purposes. Due consideration should again be given to the quality of capital elements to ensure that there is an appropriate balance of going concern and wind-up capital.

**Determination of capital resources to meet regulatory capital requirements - other approaches on determination of capital resources**

17.11.40 The supervisor may also apply approaches that are not based on an explicit categorisation of capital instruments, but more on an assessment of the quality of individual capital instruments and their specific features. For example, the terms of a hybrid capital instrument may not provide enough certainty that coupon payments will be deferred in times of stress. In such a case, the supervisor’s approach may limit (possibly taking into account further quality criteria) the ability of that instrument to cover the regulatory capital requirements.

**Determination of capital resources to meet regulatory capital requirements - choice and combination of approaches**

17.11.41 Each approach has advantages and disadvantages. Jurisdictions should consider the organisation and sophistication of the insurance sector and choose the best approach appropriate to the circumstances. Whatever approach is used overall, it should be transparent and be consistently applied so that capital resources are of sufficient quality on a going concern and a wind-up basis.

17.11.42 It is recognised that in some markets, only a limited range of instruments (for example, pure equity) may meet the quality criteria set out above. Accordingly, supervisors in such markets may wish to restrict the range of instruments that may be included in capital resources for solvency purposes or to apply procedures for prior approval as appropriate.
17.11.43 It is also important that the approach to the determination of capital resources for solvency purposes is consistent with the framework and principles underlying the determination of regulatory capital requirements. This includes not only the implemented range of solvency control levels but is also relevant with regard to the target criteria underlying the regulatory capital requirements. In particular, the target criteria for regulatory capital requirements and hence the approach to determining capital resources should be consistent with the way in which the supervisor addresses the two broad aims of capital from a regulatory perspective as described in Guidance 17.2.6.

17.11.44 To illustrate this, suppose that in setting regulatory capital requirements the supervisor would consider the maximum probability over a specified time period with which they are willing to let unforeseen losses cause the insolvency of an insurer. In such a case, insurers would need to maintain sufficient capital resources to absorb losses before insolvency or winding-up occurs. Hence the determination of capital resources would need to lay sufficient emphasis on the first objective stated in Guidance 17.2.6 (loss absorbency under going concern), and could not entirely rely on the second objective (loss absorbency solely under insolvency or winding-up).

Additional guidance for insurance groups and insurance legal entities that are members of groups

17.11.45 The considerations set out in Guidance 17.11.1 - 17.11.44 above apply equally to insurance legal entity and group-wide supervision. See Guidance 17.10.22 for additional guidance on the criteria for the assessment of the quality and suitability of capital resources for insurance groups and insurance legal entities that are members of groups.

Multiple gearing and intra-group creation of capital

17.11.46 Double gearing may occur if an insurer invests in a capital instrument that counts as regulatory capital of its subsidiary, its parent or another group entity. Multiple gearing may occur if a series of such transactions exist.

17.11.47 Intra-group creation of capital may arise from reciprocal financing between members of a group. Reciprocal financing may occur if an insurance legal entity holds shares in or makes loans to another legal entity (either an insurance legal entity or otherwise) which, directly or indirectly, holds a capital instrument that counts as regulatory capital of the first insurance legal entity.

17.11.48 For group-wide capital adequacy assessment with a group level focus, a consolidated accounts method would normally eliminate intra-group transactions and consequently multiple gearing and other intra-group creation of capital whereas, without appropriate adjustment, a legal entity focus may not. Whatever approach is used, multiple gearing and other intra-group creation of capital should be identified and treated in a manner deemed appropriate by the supervisor to largely prevent the duplicative use of capital.

Leverage
17.11.49 Leverage arises where a parent, either a regulated company or an unregulated holding company, issues debt or other instruments which are ineligible as regulatory capital or the eligibility of which is restricted and down-streams the proceeds as regulatory capital to a subsidiary. Depending on the degree of leverage, this may give rise to the risk that undue stress is placed on a regulated entity as a result of the obligation on the parent to service its debt.

**Fungibility and transferability**

17.11.50 In the context of a group-wide solvency assessment, excess capital in an insurance legal entity above the level needed to cover its own capital requirements may not always be available to cover losses or capital requirements in other insurance legal entities in the group. Free transfer of assets and capital may be restricted by either operational or legal limitations. Some examples of such legal restrictions are exchange controls in some jurisdictions, surpluses in with-profits funds of life insurers which are earmarked for the benefit of policyholders and rights that holders of certain instruments may have over the assets of the legal entity. In normal conditions, surplus capital at the top of a group can be down-streamed to cover losses in group entities lower down the chain. However, in times of stress such parental support may not always be forthcoming or permitted.

17.11.51 The group-wide capital adequacy assessment should identify and appropriately address restrictions on the fungibility of capital and transferability of assets within the group in both “normal” and “stress” conditions. A legal entity approach which identifies the location of capital and takes into account legally enforceable intra-group risk and capital transfer instruments may facilitate the accurate identification of, and provision for, restricted availability of funds. Conversely an approach with a consolidation focus using a consolidated accounts method which starts by assuming that capital and assets are readily fungible/transferable around the group will need to be adjusted to provide for the restricted availability of funds.

**General provisions on the use of an internal model to determine regulatory capital requirements**

17.12 Where a supervisor allows the use of internal models to determine regulatory capital requirements, the supervisor:

- establishes appropriate modelling criteria to be used for the determination of regulatory capital requirements, which require broad consistency among all insurers within the jurisdiction; and

- identifies the different levels of regulatory capital requirements for which the use of internal models is allowed.

17.12.1 Internal models can be considered in the dual contexts of:
• a method by which an insurer determines its own economic capital\(^{32}\) needs; and
• a means to determine an insurer's regulatory capital resources and requirements, where appropriate.

In either case, the quality of the insurer's risk management and governance is vital to the effective use of internal models. If the insurer has supervisory approval, internal models can be used to determine the amount of the insurer's regulatory capital requirements. However, an insurer should not need supervisory approval, initial or ongoing, for the use of its internal model in determining its own economic capital needs or management.

17.12.2 One of the main purposes of an internal model is to better integrate the processes of risk and capital management within the insurer. Among other uses, internal models can be used to determine the economic capital needed by the insurer and, if an insurer has supervisory approval, to determine the amount of the insurer's regulatory capital requirements. As a basic principle, an internal model that is to be used for regulatory capital purposes should already be in established use for determining economic capital. The methodologies and assumptions used for the two purposes should be consistent, any differences being explainable in terms of the difference in purposes.

17.12.3 Where the supervisor allows a range of standardised and more tailored approaches for regulatory capital purposes, including internal models, an insurer should have a choice as to which approach it adopts,\(^{33}\) subject to satisfying certain conditions established by the supervisor on the use of internal models for regulatory capital purposes.

17.12.4 Where there is a choice of approach allowed by a supervisor, it is inappropriate for an insurer to be able to adopt a process of "cherry-picking" between those approaches\(^{34}\) – for example, by choosing to use its model for regulatory capital purposes only when the model results in a lower capital requirement than a standardised approach. The IAIS supports the use of internal models where appropriate as they can be a more realistic, risk-responsive method of calculating capital requirements, but discourages any "cherry-picking" practices by insurers.

17.12.5 In particular, where the risk profile of an insurer which is using a standardised approach for calculating its regulatory capital requirements is such that the assumptions underlying this approach are inappropriate, the supervisor may use its powers to increase the insurer's capital requirement, or to require the insurer to reduce the risks it bears. However, in such circumstances the supervisor should also consider encouraging the insurer to develop a full or partial internal model which

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\(^{32}\) Economic capital refers to the capital which results from an economic assessment of the insurer's risks given the insurer's risk tolerance and business plans.

\(^{33}\) There are a number of considerations that the insurer would also have to make before deciding to invest in constructing an internal model, one of which is cost. The IAIS is not advocating that all insurers must have an internal model (although their use is encouraged where appropriate).

\(^{34}\) Refer to Guidance 17.12.14 in relation to "cherry-picking" in the particular context of partial internal models.
might enable its risk profile to be better reflected in its regulatory capital requirements.

17.12.6 Where the supervisor is aware that an insurer has an existing internal model but has not sought approval to use it to calculate the regulatory capital requirement, the supervisor should discuss this decision with the insurer.

17.12.7 Effective use of internal models by an insurer for regulatory capital purposes should lead to a better alignment of risk and capital management by providing incentives for insurers to adopt better risk management procedures which can:

- produce regulatory capital requirements that are more risk sensitive and better reflect the supervisor’s target criteria; and
- assist the integration of the internal model fully into the insurer's strategic, operational and governance processes, systems and controls.

Criteria for the use of an internal model to determine an insurer's regulatory capital requirements

17.12.8 Where a supervisor allows the use of internal models to determine regulatory capital requirements, the supervisor should determine modelling criteria, based upon the level of safety required by the supervisor, to be used by an insurer adopting an internal model for that purpose. These criteria should require broad consistency between all insurers within the jurisdiction being based on the same broad level of safety requirements applied to the overall design and calibration of the standardised approach to determining regulatory capital requirements. Discussions with the insurance industry in a jurisdiction may also assist in achieving consistency. The supervisor should set out for which of the different levels of regulatory capital requirements the use of internal models is allowed and determine the modelling criteria for each level.

17.12.9 In particular, when considering whether an internal model may be used in determining the MCR, the supervisor should take into account the main objective of the MCR (ie to provide the ultimate safety net for the protection of policyholders) and the ability of the MCR to be defined in a sufficiently objective and appropriate manner to be enforceable. If internal models are allowed for determining the MCR, particular care should be taken so that the strongest supervisory action that may be necessary if the MCR is breached can be enforced, for example if the internal model is challenged in a court of law.

17.12.10 The IAIS does not prescribe specific solvency requirements which are compulsory to all IAIS members. Notwithstanding this, the supervisor will need to establish the appropriate modelling criteria to be used by insurers to meet its regulatory capital requirements, and the insurer’s internal models will need to be calibrated accordingly if used for that purpose. The IAIS notes that some supervisors who allow the use of internal models to determine regulatory capital requirements have set a confidence level for regulatory purposes, which is comparable with a minimum investment grade level. Some examples of modelling criteria
include a 99.5% VaR\textsuperscript{35} calibrated confidence level over a one year timeframe,\textsuperscript{36} a 99% TVaR\textsuperscript{37} over one year\textsuperscript{38} and a 95% TVaR over the term of the policy obligations. Different criteria apply for PCR and MCR.

17.12.11 If an internal model is used for regulatory capital purposes, the insurer should ensure that its regulatory capital requirements determined by the model are calculated in a way that is consistent with the objectives, principles and criteria used by the supervisor. For example, the insurer may be able to apply the confidence level specified in the supervisors' modelling criteria directly to the probability distribution forecasts used in its internal model. Alternatively, depending on the insurer's own modelling criteria for its economic capital, an insurer may have to recalibrate its internal model to the modelling criteria required by the supervisor in order to use it for regulatory capital purposes. This will allow internal models to have a degree of comparability to enable supervisors to make a meaningful assessment of an insurer's capital adequacy, without sacrificing the flexibility needed to make it a useful internal capital model in the operation of the insurer's business. Further elaboration is provided in Guidance 17.15.1 - 17.15.2.

17.12.12 It is noted that, due to the insurer-specific nature of each internal model, internal models can be very different from each other. Supervisors, in allowing the use of an internal model for regulatory capital purposes, should preserve broad consistency of capital requirements between insurers with broadly similar risks.

Partial internal models

17.12.13 The IAIS supports the use of partial internal models for regulatory capital purposes, where appropriate. A partial internal model typically involves the use of internal modelling to substitute parts of a standardised approach for the determination of regulatory capital requirements. For example, an insurer could decide to categorise its insurance contracts along business lines for modelling purposes. If the regulatory capital requirements for some of these categories are determined by modelling techniques, while the capital requirements for other categories are determined using a standardised approach, then this would constitute the insurer using a partial internal model to calculate regulatory capital.

17.12.14 Partial internal models are often used to smooth an insurer's transition to full use of an internal model or to deal with instances such as the merger of two insurers, one of which uses an internal model, and the other which uses a standardised approach. Given the potential complexity of a full internal model, use of a partial internal model could be a satisfactory approach provided its scope is properly defined (and

\textsuperscript{35} VaR – Value at Risk – an estimate of the worst expected loss over a certain period of time at a given confidence level.

\textsuperscript{36} This is the level expected in Australia for those insurers that seek approval to use an internal model to determine their MCR. It is also the level used for the calculation of the risk-based Solvency Capital Requirement under the European Solvency II regime.

\textsuperscript{37} TVaR – Tail Value at Risk – the VaR plus the average exceedence over the VaR if such exceedence occurs.

\textsuperscript{38} These are the modelling criteria of the Swiss Solvency Test.
approved by the supervisor). Provided the reduced scope of the internal model is soundly justified, the use of a partial internal model could be allowed as a permanent solution. However, as discussed above, there could be a tendency for an insurer to adopt a “cherry-picking” approach in the use of internal models. This particularly applies where partial modelling is allowed. The supervisor should place the onus on the insurer to justify why it has chosen to only use internal models for certain risks or business lines. Where this justification is not sound enough, the supervisor should take appropriate action eg refuse or withdraw approval of the model or impose a capital add-on until the model has developed to a sufficient degree.

17.12.15 This ICP should be applied to both partial and full internal models. Partial models should therefore be subject, as appropriate, to the full range of tests: the “statistical quality test”, “calibration test” and “use test” (see Guidance 17.13.1 - 17.17.8). In particular, an insurer should assess how the partial internal model achieves consistency with the modelling criteria specified by the supervisor for regulatory purposes. As part of the approval process for regulatory capital use, an insurer should be required to justify the limited scope of the model and why it considers that using partial internal modelling for determining regulatory capital requirements is more consistent with the risk profile of the business than the standardised approach or why it sufficiently matches regulatory capital requirements. The insurer should clearly document the reasons behind its decision to use partial internal models. If, for example, this is to ease transition towards full internal models, the insurer should outline a transitional plan, considering the implications for risk and capital management of the transition. Such plans and use of partial internal models should be reviewed by the supervisor, who may decide to impose certain restrictions on the partial model’s use for calculating regulatory capital (for example, introducing a capital add-on during the transitional period).

Additional guidance for group-wide internal models

17.12.16 Where a supervisor allows the use of group-wide internal models to determine regulatory capital requirements, the supervisor should determine modelling criteria for such models, based upon the level of safety required by the supervisor applicable to an insurance group or an insurance legal entity adopting an internal model for that purpose.

17.12.17 The modelling criteria for internal models for regulatory capital purposes and the process for internal model approval that a supervisor establishes should require broad consistency between group-wide

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39 A group-wide internal model is a risk measurement system a group uses for its internal purposes to analyse and quantify risks to the group as a whole as well as risks to the various parts of the group, to determine the capital resources needed to cover those risks and to allocate capital resources across the group. Group-wide internal models include partial models which capture a subset of the risks to the group and/or all the risks of a subset of the group. Group-wide internal models also include combinations of models in respect of different parts of the group. An insurer’s internal model may be part of a broader group-wide model rather than a standalone model.
regulatory capital requirements and regulatory capital requirements of individual insurance legal entities.

17.12.18 Group-wide internal models can vary greatly depending on their group-specific nature. In allowing the use of group-wide internal models for regulatory capital purposes, supervisors should preserve broad consistency between insurance groups and insurers with broadly similar risks e.g., insurance legal entities and insurance groups operating through a branch structure in a jurisdiction. The supervisor should design modelling criteria and the process for model approval so as to maintain broad consistency between the regulatory capital requirements determined using internal models and standardised approaches.

17.12.19 The IAIS recognises that modelling criteria may differ among supervisors. For insurance groups operating in multiple jurisdictions, the degree of consistency in regulatory capital requirements across group members may vary.

17.12.20 Each supervisor should set out for which group-wide regulatory capital requirements, corresponding to the solvency control level or levels which apply to an insurance group, the use of group-wide internal models is allowed.

17.12.21 In particular, when the supervisor considers allowing the use of internal models for the purpose of determining group-wide regulatory capital requirements at the MCR level, the issues relating to possible legal challenges may differ from those encountered in respect of individual insurance legal entities. For example, supervisors may need to work together to establish and co-ordinate grounds for legal action in respect of the different insurance legal entities within a group.

Initial validation and supervisory approval of internal models

17.13 Where a supervisor allows the use of internal models to determine regulatory capital requirements, the supervisor requires:

- prior supervisory approval for the insurer’s use of an internal model for the purpose of calculating regulatory capital requirements;
- the insurer to adopt risk modelling techniques and approaches appropriate to the nature, scale and complexity of its current risks and those incorporated within its risk strategy and business objectives in constructing its internal model for regulatory capital purposes;
- the insurer to validate an internal model to be used for regulatory capital purposes by subjecting it, at least, to three tests: “statistical quality test”, “calibration test” and “use test”; and
- the insurer to demonstrate that the model is appropriate for regulatory capital purposes and to demonstrate the results of each of the three tests.

Approval of the use of an internal model for determination of regulatory capital requirements
17.13.1 Where insurers may be permitted to use internal models for calculating regulatory capital requirements, the models used for that purpose should be subject to prior supervisory approval. The onus should be placed on the insurer to validate a model that is to be used for regulatory capital purposes and provide evidence that the model is appropriate for those purposes. The IAIS considers that an insurer should not need supervisory approval for the use of internal models in determining its own economic capital needs.

17.13.2 The supervisor may prescribe requirements which will allow it to assess different models fairly and facilitate comparison between insurers within its jurisdiction. However, overly prescriptive rules on internal model construction may be counter-productive in creating models which are risk-sensitive and useful for insurers. Therefore, although a certain level of comparability can be achieved by the calibration requirements, full and effective comparison across jurisdictions to align best practice may be best achieved by dialogue between supervisors and industry.

17.13.3 The supervisor should require that in granting approval for the use of an internal model to calculate regulatory capital requirements, it has sufficient confidence that the results being produced by the model provide adequate and appropriate measures of risk and capital. Although the supervisor may encourage insurers to develop internal models that better reflect their risks as soon as possible, this should not lead to models being approved until there is confidence that they are calibrated correctly. The supervisor may therefore feel it necessary to evaluate an internal model over a specified period of time, for example a few years, prior to approval. For supervisors, approval of an internal model could require considerable expertise (depending on the sophistication of the model) which may need to be developed. In addition, it may be necessary to introduce different supervisory powers to allow the approval of internal models.

17.13.4 The supervisor should use, at least, the “statistical quality test”, “calibration test” and “use test”, as the basis of its approval process. While a broad range of internal model approaches may be suitable for internal economic capital assessment purposes, and this should not be subject to supervisory approval, supervisors may want to place requirements on the internal model approaches that would be regarded as acceptable for regulatory capital purposes. In approving the use of an internal model for calculating regulatory capital requirements, the supervisor should consider the primary role of the model as part of the insurer's risk management procedures. Any requirements imposed by the supervisor on the approval of a model for use in determining regulatory capital requirements should not prevent the model from being sufficiently flexible to be a useful strategic decision making tool which reflects the insurer's unique risk profile. Consistent standards for the approval of an insurer's internal model should be applied by the supervisor, regardless of whether the model is developed in-house by the insurer or by an external party.

17.13.5 The “statistical quality test” and the “use test” are envisaged to be more insurer-specific measures which should allow the supervisor to gain an understanding of how a particular insurer has embedded its internal
model within its business. The “calibration test” would be used by the supervisor to assess the results from the internal model in comparison to the insurer’s regulatory capital requirements and to those of other insurers.

17.13.6 In addition, the insurer should review its own internal model and validate it so as to satisfy itself of the appropriateness of the model for use as part of its risk and capital management processes. As well as internal review, the insurer may wish to consider a regular independent, external review of its internal model by appropriate specialists.

Additional guidance for group-wide internal models

17.13.7 Each supervisor who permits the use of internal models for regulatory capital purposes at legal entity and/or group level should require prior supervisory approval for that purpose.

If an insurance group wishes to use its group-wide internal model for regulatory capital purposes in more than one jurisdiction in which it operates, the group may be subject to requirements that differ in a number of ways. Examples of some areas of possible variation may include:

- modelling criteria (risk measure, time horizon, level of safety);
- valuation bases for regulatory capital purposes;
- the risks that have to be modelled;
- treatment of intra-group transactions;
- approach to group-wide capital adequacy (eg group level or legal entity focus); and
- recognition of diversification across the group.

A group-wide internal model therefore needs to be sufficiently flexible to meet the differing requirements of each jurisdiction in which it is to be used for regulatory capital purposes.

17.13.8 The involved supervisors of an insurance group that conducts insurance business in more than one jurisdiction may consider their joint and common interests for the joint approval of the use of a group-wide internal model for regulatory capital purposes. If so, it may improve the efficiency and effectiveness of the approval process if the supervisors agree on common requirements for the process eg standardised language or languages for the application process.

17.13.9 Alternatively, the supervisors may independently approve the use of a group-wide internal model. Therefore, an insurance group seeking approval for a group-wide internal model may receive permission from one supervisor to use the model in that jurisdiction, while not receiving approval in another jurisdiction.

17.13.10 Similarly, where an insurance legal entity operates in other jurisdictions through a branch structure, the supervisors in those branch jurisdictions

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40 Validation should be carried out by a different department or personnel to those that created the internal model to facilitate independence.
will have an interest in the solvency of the insurance legal entity. If local 
branch supervisors in these jurisdictions are not satisfied with the capital 
requirements of the home supervisor, possibly because they are 
determined using internal models, the local branch supervisors may 
impose limitations on the branch operations. The home supervisor, 
however, does not need to have the approval of the local branch 
supervisors in order to approve the use of the insurance legal entity's 
internal model for its own purposes.

17.13.11 The degree of involvement of different supervisors in the approval 
process depends on a number of factors as illustrated in Guidance 
17.13.12 - 17.13.16.

17.13.12 In the simplest case, an insurance group operates in one jurisdiction 
only. Clearly only the supervisor in that jurisdiction needs to be involved 
in the group-wide internal model approval process. Where there is more 
than one supervisor in a jurisdiction, eg where different insurance 
activities of a group are supervised separately, then both may need to 
be involved depending on the scope of the model. Nevertheless, some 
liason with supervisors in other jurisdictions may be mutually beneficial 
to facilitate convergence and comparability across jurisdictions in respect 
of internal model standards and practice.

17.13.13 In the case of an insurance group that operates in more than one 
jurisdiction but only applies to use its group-wide internal model for 
regulatory capital purposes in one jurisdiction, eg the parent's 
jurisdiction, the group does not need group-wide internal model approval 
of other jurisdictions provided that it is using other approaches to meet 
the capital requirements of those other jurisdictions. However, the 
supervisor considering approval of the group-wide internal model may 
wish to consult the other supervisors about the relevant insurance 
markets, the group’s operations in those markets and the standard of 
modelling.

17.13.14 In the case of an insurance group that wishes to use its group-wide 
internal model in more than one jurisdiction (eg to calculate insurance 
legal entity PCRs), the supervisor of each of those jurisdictions should 
consider approval of the specific application of the group-wide internal 
model in its jurisdiction, having regard to the considerations in Guidance 
17.13.15 - 17.13.18 below.

17.13.15 When considering approval of the use of a group-wide internal model 
for group-wide regulatory capital purposes, each supervisor should 
consider:

- its group-wide regulatory capital requirements;
- whether and the extent to which its jurisdiction allows the use 
of internal models for regulatory capital purposes (eg PCR or 
both PCR and MCR);
- how its jurisdiction interacts with the other jurisdictions 
potentially involved when supervisory intervention is being 
considered; and
- the arrangements for collaboration between the supervisors of 
the legal entities within the insurance group.
17.13.16 A supervisor may delegate the approval process to another supervisor or agree to be bound by its decision while retaining supervisory responsibility. Alternatively, a group-wide supervisor may have ultimate decision-making authority over some or all of the supervisors involved. If more than one jurisdiction is concerned, making such authority legally binding may require a treaty between these jurisdictions. To be effective, each arrangement requires a high level of collaboration between supervisors. To require the model appropriately addresses all categories of risk, the supervisor making the decision needs sufficient knowledge of the local circumstances in which the group operates.

17.13.17 Supervisors should require that the approval process for the use of a group-wide internal model for regulatory capital purposes is sufficiently flexible to achieve an approach appropriate to the nature, scale and complexity at each organisational level in an insurance group (group/sub-group/individual insurance legal entity). Risks which may have a large impact at insurance legal entity level may have much smaller significance at insurance group level. Conversely, risks that may have a small impact at insurance legal entity level may aggregate to have a larger impact on risk at the group level. The nature and complexity of risks may also vary at different levels in the insurance group.

17.13.18 Whether the group-wide internal model is appropriate for regulatory purposes given the nature, scale and complexity of the risks depends on the regulatory capital requirements of a jurisdiction. While the risk coverage by an internal model may look reasonable from a group-wide perspective, it may not be reasonable from the point of view of each member of the insurance group. For example, in a group of many non-life insurers and one small life insurer it may be appropriate from an overall perspective to place less emphasis on the modelling of the life insurance risks. However this may not be appropriate from the life insurer's or supervisor’s perspective. In such circumstances, it may be necessary for the group to upgrade its model to include an adequate life insurance risk component or to set up a self-contained internal model for the life insurer in order to gain approval.

**Statistical quality test for internal models**

17.14 Where a supervisor allows the use of internal models to determine regulatory capital requirements, the supervisor requires:

- the insurer to conduct a “statistical quality test” which assesses the base quantitative methodology of the internal model, to demonstrate the appropriateness of this methodology, including the choice of model inputs and parameters, and to justify the assumptions underlying the model; and

- that the determination of the regulatory capital requirement using an internal model addresses the overall risk position of the insurer and that the underlying data used in the model is accurate and complete.

17.14.1 Given the importance of an embedded internal model to an insurer's risk management policy and operations, an internal model would generally be constructed to deliver a probability distribution of the required risk capital rather than a "point estimate". A range of approaches could
constitute an effective internal model for risk and capital management purposes, and supervisors should encourage the use of a range of different approaches appropriate to the nature, scale and complexity of different insurers and different risk exposures. There are several different techniques to quantify risk which could be used by an insurer to construct its internal model. In broad terms, these could range from basic deterministic scenarios to complex stochastic models. Deterministic scenarios would typically involve the use of stress and scenario testing reflecting an event, or a change in conditions, with a set probability to model the effect of certain events (such as a drop in equity prices) on the insurer’s capital position, in which the underlying assumptions would be fixed. In contrast, stochastic modelling often involves simulating very large numbers of scenarios in order to reflect the likely distributions of the capital required by, and the different risk exposures of, the insurer.

17.14.2 The IAIS recognises that there are numerous methodologies which an insurer could use as part of its stress and scenario testing. For example, an insurer may decide to model the effect of various economic scenarios, such as a fall in equity prices or a change in interest rates, on its assets and liabilities. Alternatively, an insurer could consider a run-off approach, where the effect of various scenarios on a specific portfolio of business as it is run-off is examined. The insurer should use scenarios which it regards as most appropriate for its business. Where the internal model is used for regulatory capital purposes, the onus is on the insurer to demonstrate to the supervisor that the chosen methodology is appropriate to capture the relevant risks for its business. This includes testing of the model to require that it can replicate its results on request and that its response to variation in input data is adequate such as that corresponding to changes in base or stress scenarios. Overall capital requirements derived from an internal model can be highly sensitive to assumptions on the effect of diversification across risks. Supervisors and insurers should therefore give particular consideration to aggregation issues. Conducting stress and scenario testing to determine the effect of shocks may be a suitable tool to validate statistical assumptions.

17.14.3 Where an internal model is established to assess risks at a modular level, ie on a risk-by-risk basis, in order to conduct an overall risk assessment, the insurer should aggregate the results for each of these risks both within and across business lines. Several methods exist to aggregate the separate results allowing for diversification effects. The IAIS considers that an insurer would generally be expected to decide how best to aggregate and account for the risks to the whole of its business. The determination of overall regulatory capital requirements by the internal model should consider dependencies within, as well as across, risk categories. Where the internal model allows for diversification effects, the insurer should be able to justify its allowance for diversification effects and demonstrate that it has considered how dependencies may increase under stressed circumstances.

17.14.4 Internal models need high quality data in order to produce sufficiently reliable results. The data used for an internal model should be current and sufficiently credible, accurate, complete and appropriate. Hence, a “statistical quality test” should examine the appropriateness of the underlying data used in the construction of the internal model. A
“statistical quality test” would include the examination of the aggregation of data, the modelling assumptions and the statistical measures used to construct the internal model. This could include an annual (or more frequent) review of the various items that are being measured (claims, lapses, etc.) updated for the additional data available together with a scrutiny of data from previous periods to determine whether this data continues to be relevant. Older data may no longer be relevant possibly due to changes in risks covered, secular trends or policy conditions and guarantees attaching. Similarly, new data may not be of substantive use when modelling items that require a long-term view of experience (such as testing the predictions of cash flows for catastrophic events).

17.14.5 An insurer may not always have sufficient reliable data in-house. In instances where an insurer lacks fully credible data it may rely on industry or other sufficiently credible data sources to supplement its own data. For example, a new company may lack its own historical data and so could use market data sources in constructing its internal model. Some supervisors have published jurisdictional data which may be of some use.

17.14.6 Another possible source of data may be from reinsurers - whose data pool is typically larger and covers a wider spectrum of the market. It is, however, important to consider that such industry data may not be entirely appropriate for all insurers. Reinsurers often only receive data in aggregated form and sometimes are only informed of larger claims or from smaller insurers whose market may not be applicable for all or many insurers. Therefore, any data not specific to the insurer would need to be carefully considered before deciding it was appropriate for use as the basis for an insurer's “statistical quality test”. Even where deemed appropriate, it may still be necessary to adjust the data to allow for differences in features between the data source and the insurer.

17.14.7 In assessing suitability of data and of other inputs, eg assumptions, to the internal model, expert judgment should be applied and supported by proper justification, documentation and validation.

17.14.8 As part of the “statistical quality test”, the insurer should be able to demonstrate that the base quantitative methodology used to construct its internal model is sound and sufficiently reliable to support the model's use, both as a strategic and capital management tool, and to calculate the insurer's regulatory capital requirements, if appropriate. The methodology should also be consistent with the methods used to calculate technical provisions.

17.14.9 A “statistical quality test” should also include a review of the internal model to determine whether the assets and products as represented in the model truly reflect the insurer's actual assets and products. This should include an analysis of whether all reasonably foreseeable and relevant material risks have been incorporated, including any financial guarantees and embedded options. Insurers should also consider whether the algorithms used are able to take into account the action of management and the reasonable expectation of policyholders. Testing should include future projections within the model and to the extent practicable “back-testing” (the process of comparing the predictions from the model with actual experience).
Additional guidance for group-wide internal models

17.14.10 For use in determining the regulatory capital requirements of an insurance legal entity, a group-wide internal model should meet the same standards as applicable to a stand-alone internal model of that insurer.

17.14.11 For use for group-wide regulatory capital requirements, group members should be sufficiently engaged with a group-wide internal model and its application to their businesses (through their input to the model, local Board involvement, capital allocation, performance measurement etc.), even if the insurance group does not use the model to determine the regulatory capital requirements of individual group members.

Calibration test for internal models

17.15 Where a supervisor allows the use of internal models to determine regulatory capital requirements, the supervisor requires the insurer to conduct a “calibration test” to demonstrate that the regulatory capital requirement determined by the internal model satisfies the specified modelling criteria.

17.15.1 As part of a “calibration test”, where an internal model is used for determining regulatory capital, the insurer should assess the extent to which the output produced by its internal model is consistent with the modelling criteria defined for regulatory capital purposes, and hence, confirm the validity of using its internal model for that purpose.

17.15.2 The “calibration test” should be used by the insurer to demonstrate that the internal model is calibrated appropriately to allow a fair, unbiased estimate of the capital required for the particular level of confidence specified by the supervisor. Where an insurer uses different modelling criteria than those specified by the supervisor for regulatory capital purposes, it may need to recalibrate its model to the supervisor's modelling criteria to achieve this.

Additional guidance for group-wide internal models

17.15.3 See Guidance 17.14.10 and 17.14.11 for additional guidance for group-wide internal models.

Use test and governance for internal models

17.16 Where a supervisor allows the use of internal models to determine regulatory capital requirements, the supervisor requires:

- the insurer to fully embed the internal model, its methodologies and results, into the insurer's risk strategy and operational processes (the “use test”);
- the insurer's Board and Senior Management to have overall control of and responsibility for the construction and use of the internal model for risk management purposes, and ensure sufficient understanding of the model's construction at appropriate levels within the insurer's organisational structure. In particular, the supervisor requires the insurer's Board and Senior Management to understand the consequences of the
internal model's outputs and limitations for risk and capital management decisions; and

- the insurer to have adequate governance and internal controls in place with respect to the internal model.

17.16.1 In considering the use of an internal model for regulatory capital purposes by an insurer, the supervisor should not merely focus on its use for that narrow purpose, but should consider the wider use of the internal model by the insurer for its own risk and capital management.

17.16.2 The “use test” is the process by which the internal model is assessed in terms of its application within the insurer's risk management and governance processes. In order for the insurer’s internal model to be most effective it should be genuinely relevant for use within its business for risk and capital management purposes.

17.16.3 Where an insurer decides to adopt a higher confidence level than the level required for regulatory capital purposes for its own purposes, for example, in order to maintain a certain investment grade rating, then “calibration" testing should also be conducted by the insurer to allow the insurer to determine the level of capital needed at this higher level. The insurer should then assess whether holding this amount of capital is consistent with the insurer's overall business strategy.

17.16.4 The insurer should have the flexibility to develop its internal model as an important tool in strategic decision making. An insurer should therefore have the flexibility to use the most appropriate risk measure and modelling techniques in its internal models. It may be beneficial if the insurer is able to demonstrate why it has chosen a particular risk measure, and it should include in its internal model an appropriate recalibration or reconciliation, if necessary, between the modelling criteria used in the model for its own risk and capital management purposes and those set by the supervisor for regulatory capital purposes. Differences between the economic capital and the regulatory capital requirements should be explicit and capable of being explained by the insurer to its Board and the supervisor.

17.16.5 The “use test” is a key method by which the insurer can demonstrate that its internal model is integrated within its risk and capital management and system of governance processes and procedures. As part of the “use test”, an insurer should examine how the internal model is used for operational management purposes, how the results are used to influence the risk management strategy and business plan of the insurer, and how Senior Management are involved in applying the internal model in running the business. An insurer should demonstrate to the supervisor that an internal model used for regulatory capital purposes remains useful and is applied consistently over time and that it has the full support of and ownership by the Board and Senior Management.

17.16.6 The insurer’s Senior Management should take responsibility for the design and implementation of the internal model, in order to ensure full embedding of the model within the insurers' risk and capital management processes and operational procedures. The methodology used in building the model should be compatible with the overall enterprise risk management framework agreed to by the Board and Senior
Management. Although the Board and Senior Management may not be able to de-construct the internal model in detail, it is important that the Board has overall oversight of the model's operation on an ongoing basis and the level of understanding necessary to achieve this. The Board and Senior Management should also ensure that processes are in place to update the internal model to take into account changes in the insurer's risk strategy or other business changes.

17.16.7 Various business units within the insurer may be involved in the construction and operation of the internal model, such as risk management, capital management, finance and actuarial departments, depending on the size of the insurer. The experience and technical ability of staff involved in the construction and operation of the internal model should be an important consideration for the insurer. For a model to pass the “use test” it would be expected that an insurer would have a framework for the model's application across business units. This framework should define lines of responsibility for the production and use of information derived from the model. It should also define the purpose and type of management information available from the model, the decisions to be taken using that information, and the responsibilities for taking those decisions. The “use test” should also ensure the adequacy of systems and controls in place for the maintenance, data feeds and results of the model. The IAIS notes that internal models may require significant IT resources and costs, which should be a consideration for the insurer in developing its models.

17.16.8 The IAIS considers that governance processes and communication in respect of an internal model are as important as its construction. An internal model should be subject to appropriate review and challenge so that it is relevant and reliable when used by the insurer. The key elements and results from the internal model should be understood by the key personnel within the insurer, including the Board, and not only by those who have constructed it. This understanding should ensure that the internal model remains a useful decision-making tool. If the internal model is not widely understood, it will not be achieving its purpose and adding value to the business. The “use test” is key in ensuring the relevance of the internal model to the insurer's business.

Additional guidance for group-wide internal models

17.16.9 See Guidance 17.14.10 and 17.14.11 for additional guidance for group-wide internal models.

Documentation for internal models

17.17 Where a supervisor allows the use of internal models to determine regulatory capital requirements, the supervisor requires the insurer to document the design, construction and governance of the internal model, including an outline of the rationale and assumptions underlying its methodology. The supervisor requires the documentation to be sufficient to demonstrate compliance with the regulatory validation requirements for internal models, including the statistical quality test, calibration test and use test outlined above.

17.17.1 The insurer should document the design and construction of the internal model sufficient for a knowledgeable professional in the field to be able
to understand its design and construction. This documentation should include justifications for and details of the underlying methodology, assumptions and quantitative and financial bases, as well as information on the modelling criteria used to assess the level of capital needed.

17.17.2 The insurer should also document, on an ongoing basis, the development of the model and any major changes, as well as instances where the model is shown to not perform effectively. Where there is reliance on an external vendor/supplier, the reliance should be documented along with an explanation of the appropriateness of the use of the external vendor/supplier.

17.17.3 The insurer should document the results of the “statistical quality test”, “calibration test” and “use test” conducted to enable the supervisor to assess the appropriateness of its internal model for regulatory capital purposes.

Additional guidance for group-wide internal models

17.17.4 In view of the potential complexity of a group-wide internal model, the flexibility required and the potential need for multiple supervisory approvals, it is essential that the group fully document all aspects of the group-wide internal model clearly and unambiguously. This enables supervisors to identify what is approved and what is not approved. Supervisors should require the insurance group to provide thorough documentation of the scope of an internal model, clarifying what falls within and outside of the model boundaries and what parts of the group universe are modelled. Supervisory authorities should know the boundary to the internal model.

17.17.5 The documentation of the group-wide internal model should include at least:

- a full description of the risk profile of the insurance group and how the group models those risks, including the underlying central assumptions and methods;
- the parts, entities and geographical locations of the insurance group and which are included or excluded from the scope of the model submitted for approval;
- specification of which risks are modelled, with particular focus on group-wide risks;
- intra-group transactions such as (subordinated) loans and other hybrid instruments together with their different level of triggers, guarantees, reinsurance, capital and risk transfer instruments, contingent assets and liabilities; off-balance sheet items and special purpose entities;
- the effect of these instruments, either on individual insurance legal entities or on the insurance group considered as one single economic entity or on both, depending on supervisory requirements and how these effects are modelled;
- justifications for specific decisions taken in terms of assumptions, scope, simplifications;
• the flexibility of the model architecture to cope with central assumptions ceasing to be valid;

• more generally the insurance group’s processes for validating, maintaining and updating the model including the use of stress testing and scenario analysis and the results of those tests and analyses;

• how the model allows for and models fungibility of capital, transferability of assets and liquidity issues, the assumptions made especially regarding the treatment of intra-group transactions and the free flow of assets and of liabilities across different jurisdictions, and how the group uses the model for an analysis or a qualitative assessment of liquidity issues; and

• the allocation of capital to insurance legal entities implied by the group-wide model and how this would change in times of stress for insurance groups established in more than one jurisdiction. Such allocation is required by supervisors, even if an insurance group uses a different allocation, eg by region or business line, for management purposes.

17.17.6 If elements are omitted from the group-wide internal model, the supervisors should require an explanation within the required documentation, for example if and why a standardised approach is used for some insurance legal entities, lines of business or risks.

17.17.7 The supervisors should require the insurance group to provide documentation describing whether and how the modelling is consistent over different jurisdictions or insurance legal entities regarding, for example, modelling criteria, risks, lines of business, intra-group transactions or capital and risk transfer instruments (CRTIs) with suitable explanations for any differences in approach.

17.17.8 Diversification/concentration of risks means that some risks or positions are offset or increased by other risks or positions. The supervisors should require, within the framework of the required internal model documentation, a description of how the insurance group:

• incorporates diversification/concentration effects at the relevant different levels within the group-wide internal model;

• measures such effects in normal and in adverse conditions;

• confirms those measurements for reasonableness, and

• allocates diversification effects across the group according to supervisory requirements.

Credit for diversification effects should only be allowed where appropriate having regard to risk correlations in adverse financial conditions.

**Ongoing validation and supervisory approval of the internal model**

17.18 Where a supervisor allows the use of internal models to determine regulatory capital requirements, the supervisor requires:
• the insurer to monitor the performance of its internal model and regularly review and validate the ongoing appropriateness of the model’s specifications. The supervisor requires the insurer to demonstrate that the model remains fit for regulatory capital purposes in changing circumstances against the criteria of the statistical quality test, calibration test and use test;

• the insurer to notify the supervisor of material changes to the internal model made by it for review and continued approval of the use of the model for regulatory capital purposes;

• the insurer to properly document internal model changes; and

• the insurer to report information necessary for supervisory review and ongoing approval of the internal model on a regular basis, as determined appropriate by the supervisor. The information includes details of how the model is embedded within the insurer’s governance and operational processes and risk management strategy, as well as information on the risks assessed by the model and the capital assessment derived from its operation.

17.18.1 Over time an insurer’s business may alter considerably, as a result of internal factors or events (such as a change in insurer strategy) and external factors or events (such as a change in interest rates), so that the internal model may no longer fully capture the risks to which the insurer is exposed unless adapted. The supervisor should reassess an insurer’s internal model and the results that it produces on a regular basis against the criteria of the statistical quality test, calibration test and use test so that it remains valid for use, both as a strategic decision-making tool in the context of the insurer’s own risk and capital management, and as a means of calculating regulatory capital requirements where appropriate. In general only material changes to the model (such as changing the underlying model structure or the risk measure used) or to the risks faced by the insurer should require the model to be reassessed by the supervisor. A “model change policy” could be agreed between the supervisor and the insurer regarding the degree and timing of changes made to the internal model. This would enable the insurer to enact minor changes to its internal model without seeking prior supervisory approval (provided the changes are in accordance with the agreed policy), thereby allowing the model to be updated in a quicker and more flexible way.

17.18.2 The insurer should be required to notify the supervisor of material changes to the internal model and to properly document changes to enable the supervisor to assess, for continued approval, the ongoing validity of the model for use in determining regulatory capital requirements. Following any material changes to an internal model, the supervisor may give the insurer a reasonable amount of time so that the updated model is embedded in its risk strategies and operational processes.

17.18.3 The insurer should demonstrate that the data used in the internal model remains appropriate, complete and accurate for this purpose.

17.18.4 The supervisor should take care that its ongoing validation requirements do not unduly restrict the use of the internal model by the insurer for its
own risk and capital management purposes and thereby reduce its ability to comply with the use test.

Additional guidance for group-wide internal models

17.18.5 The insurance group should adjust the model for material changes in group composition and operations, including mergers, acquisitions and other structural changes of affiliated entities or jurisdictional changes.

17.18.6 The supervisor should require the insurance group to provide documentation of material changes in group operations and the reasons why continued use of the group-wide internal model would remain appropriate following the change. If such reasons cannot be given or are not sufficient the supervisor should require the group to propose appropriate model changes as a result of the material change for reassessment of approval by the supervisor.

Supervisory responsibilities

17.18.7 The IAIS considers that it is essential that supervisors are able to understand fully the insurers' internal models and be able to appraise their quality. To this end, the supervisor should have access to experienced personnel with appropriate technical ability, as well as sufficient resources. It is likely to take time for supervisors to acquire the necessary experience to appraise an insurer’s internal model. Without the experience and resources, the supervisor may be unable to reliably approve the use of an insurer’s internal model for regulatory purposes. The supervisor may wish to use external specialists that are considered to have the appropriate experience, such as actuarial consultants, accountancy firms and ratings agencies, to assist it in reviewing an insurer’s internal models. In such instances, the supervisor should retain the final responsibility for review and approval of the use of the internal model for regulatory purposes.

17.18.8 It may be appropriate for a supervisor to consider transitional measures when permitting insurers to use internal models for regulatory capital purposes for their first time. Such measures will permit the necessary time for both insurers and the supervisor to become familiar with the internal models and their uses. For example, during a transition period, the supervisor could include the use of partial internal modelling, to allow the insurer to move gradually to full use of internal models or the supervisor could require parallel reporting of regulatory capital determined by both the internal model and standardised approach. The supervisor may also consider applying a minimum capital level during the transition period.

17.18.9 The supervisor may need to impose additional capital requirements (capital add-ons) or take other supervisory action to address any identified weaknesses in an internal model, either prior to approving the use of the model, as a condition on the use of the model or in the context of a review of the ongoing validity of an internal model for regulatory capital purposes. It may be necessary to introduce additional supervisory powers, to allow such supervisory actions and measures, when internal models are allowed for regulatory capital purposes by a supervisor.
17.18.10 Where an insurer which is a subsidiary of an insurance group seeks approval for the use of an internal model which itself is part of a broader “group model”, the supervisor of this subsidiary should conduct the approval process in close co-operation with the group-wide supervisor. In particular, the supervisor of the subsidiary should check the status of the “group model” and seek information from the group-wide supervisor about its own approval process.

Supervisory reporting

17.18.11 For supervisory approval purposes, supervisors should require the insurer to submit sufficient information for them to be able to approve the use of the internal model for regulatory capital purposes and to give confidence to the supervisor that the insurer is appropriately carrying out its responsibility to manage its risks and protect the interests of policyholders. This should include the results of analysis conducted under the “statistical quality test”, “calibration test” and “use test”. While supervisors should have the power to determine the exact nature and scope of the information they require, supervisory reporting should be appropriate to the nature, scale and complexity of an insurer’s business.

17.18.12 The level of information on internal models necessary to allow meaningful assessment by supervisors would be expected to include appropriate information regarding the insurer’s risk and capital management strategy – for example, how the model is embedded into the insurer’s governance procedures, overall business strategy, operational procedures and risk processes. An insurer should report details of the risks assessed by the model, including how these are identified and measured, as well as information on the results of the internal model analysis, the economic capital derived from these results and how the results of the internal model compare to those derived from the supervisory standardised approach. 41

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41 Supervisors may consider that the comparison between the capital requirements from an internal model and a supervisory standardised approach should only be required during a transition period.
ICP 18 Intermediaries
The supervisor sets and enforces requirements for the conduct of insurance intermediaries, in order that they conduct business in a professional and transparent manner.

Introductory Guidance

18.0.1 There is a diverse range of organisations and individuals carrying out insurance intermediation, and channels through which this is undertaken. In order to ensure consumer protection and to promote a level playing field amongst these actors, this ICP applies to the supervision of those conducting the activity of insurance intermediation. Some of the Standards under this ICP apply to the supervision of the individuals providing insurance intermediation services to customers. Other Standards apply to the organisation within which the insurance intermediation is carried out; where this is the case, it is made clear in the corresponding guidance. Where an insurer’s direct sales staff solicit, negotiate or sell insurance as employees of the insurer, the supervisor would apply the relevant Standards to the insurer.

18.0.2 Some intermediaries do not have direct contact with the customer but act with other intermediaries to place business with insurers (such as wholesale intermediaries). Even though they do not necessarily deal directly with the purchaser of insurance, they perform one of the functions in the chain of soliciting, negotiating or selling insurance, and are within the scope of this ICP.

18.0.3 Where the Standards under this ICP apply to the intermediary as an organisation, the supervisor should hold those responsible for the intermediary’s governance to account for implementation of the requirements.

18.0.4 Individuals or organisations which only refer (or introduce) potential customers to an insurer or insurance intermediary, without carrying out insurance intermediation, are excluded from the scope of this ICP. Also excluded from the scope are persons, such as tax advisers or accountants, who in conducting another professional activity provide:

- advice on insurance cover on an occasional basis in the course of that other activity; or
- information of a general nature on insurance products (without advising on the choice of insurance product provider),

provided that the purpose of that professional activity is not to intermediate an insurance contract.

18.0.5 Insurance intermediaries may also perform functions supplemental to insurance intermediation, many of which may be described as outsourced functions of the insurer. These supplemental functions may include underwriting, premium collection, administration, management of insurance claims, loss adjusting and claims appraisal. These functions are excluded from the IAIS definition of insurance intermediation.
However, in some jurisdictions these supplemental functions are included in their definition of insurance intermediation. The outsourcing of processes that are relevant to business conduct is addressed in other ICPs (see ICP 19 Conduct of Business and – for insurers – ICP 8 Risk Management and Internal Controls).

18.0.6 Insurance intermediation involves the interface between insurers and customers. Effective assessment of the quality of insurance intermediation to a large extent requires supervisory consideration of policies, processes and procedures that relate to individual customer relationships and individual transactions.

18.0.7 Where intermediaries are part of a group, the application of appropriate policies and processes on insurance intermediation should be consistent across the group, recognising local requirements and specificities, and should result in the fair treatment of customers on a group-wide basis.

Proportionality with regard to intermediaries

18.0.8 Intermediation systems and practices are closely linked with jurisdictions’ tradition, culture, legal regime and the degree of development of insurance markets. For this reason, supervisory approaches to insurance intermediation also tend to vary. Such diversity should be taken into consideration in implementing this ICP in order to promote the fair treatment of customers.

18.0.9 In implementing this ICP, the supervisor should take into account that there are various business models ranging from sole traders to large enterprises, including specialist wholesale or reinsurance intermediaries.

18.0.10 The nature of the customers with which an intermediary interacts and the complexity of the products offered are also relevant to the supervisory approach. Retail customers, in particular vulnerable consumers, have different needs in terms of consumer protection than professional ones; life products with an investment element are typically more complex than general personal lines products.

18.0.11 In light of market diversity, in implementing this ICP, the supervisor should consider focusing on the activity carried out by the intermediary, to ensure consistency and minimise the opportunity for regulatory arbitrage.

18.0.12 Supervisors are faced with balancing the need for consumers to receive an appropriate level of protection and the benefits of innovation and competition. The supervisor should consider whether its licensing and supervisory requirements impose unreasonable barriers to entry for small or emerging intermediary businesses, or inhibit beneficial innovations, and thereby limit the accessibility of insurance coverage to consumers.

Types of intermediaries

18.0.13 Intermediaries fall into two categories: i) acting primarily on behalf of the insurer; or ii) acting primarily on behalf of the customer:

- Where the intermediary acts primarily on behalf of the insurer and 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 several. The products they can offer may be restricted by agency agreements with the insurer(s) concerned.

- Where the intermediary acts primarily on behalf of the customer, the intermediary is independent of the insurer(s) whose products he sells. Often referred to as “broker”, or “independent financial adviser”, they are able to select products from those available across the market.

18.0.14 Some supervisors do not distinguish between different intermediary categories in legislation and instead supervise according to the activity performed. In some jurisdictions, it may be possible for an intermediary to have a different status depending on the customer relationship and the product or service being offered. In others, an intermediary is prevented from acting in any capacity other than the one in which it has been licensed to do business, in order to avoid conflicts of interest.

18.0.15 Intermediary operations range from large international organisations to local sole traders. Intermediary organisations sometimes operate as independent enterprises or divisions of insurers or other financial institutions, or as part of non-financial organisations. Insurance intermediation may also be performed by digital means, such as website and mobile phone applications.

18.0.16 Insurers use various distribution channels to market and sell insurance products. These can include a variety of partners - such as car dealerships, post offices, mobile phone operators, travel agents, other financial institutions and other retailers - who offer insurance alongside or as an add-on to the primary goods and services in which they trade. In many cases the activities of these distribution channels would constitute intermediation.

Intermediaries' role in promoting public trust and confidence in the insurance sector

18.0.17 In most insurance markets, intermediaries serve as important distribution channels of insurance. Their good conduct and professional competence are essential to promote confidence in insurance markets.

18.0.18 It is in the interests of supervisors, in promoting fair, safe and stable insurance markets, that the public has trust and confidence in the insurance sector. Insurance intermediaries’ interface between consumers and insurers gives them a key role in building and justifying this public trust and confidence.

18.0.19 In some jurisdictions, intermediaries’ duty to act in a professional and transparent manner is supported by professional bodies and other interested organisations. Such organisations encourage, amongst other things, the obtaining of professional qualifications, continuous professional development, ethical behaviour, the fair treatment of customers and better communication with the public. Such measures are aimed at enhancing public confidence in insurance intermediaries through raising professional standards.

Intermediaries' role in promoting financial awareness
18.0.20 Intermediaries can promote consumer protection by assisting consumers to make better informed decisions about the products that they buy. This helps to address a core consumer protection concern about asymmetries of information between financial services product providers and the public to whom the products are sold. The adoption of good conduct of business practices by insurers and insurance intermediaries helps to ensure that customers are sufficiently informed on the insurance products they are considering buying, before concluding a contract.

18.0.21 Enhancing financial awareness is a further means of ensuring that consumers are aware of the types of products available to them and understand their purpose, how they work and their key features, including cost. This understanding helps consumers to compare products and to purchase insurance products that meet their needs. Enhanced financial awareness can be achieved, for example, through formal education initiatives and targeted awareness campaigns led by insurers and intermediaries, individually or jointly.

18.0.22 The promotion of financial awareness may benefit consumers in jurisdictions where consumer protection standards are weak or levels of financial literacy are low. It is also especially important when dealing with more complex financial products, particularly those with an investment element.

18.0.23 Improved understanding by consumers of the terms and benefits they can expect from insurance products may also lead to a reduction in complaints against intermediaries or the insurers whose products they sell.

18.0.24 Insurance intermediaries are not the only stakeholders in promoting the financial awareness of consumers; governments, supervisors, social interest organisations and insurers have a significant role to play in consumer protection. Other stakeholders, using various communication channels, are also able to play a significant role. Nevertheless, intermediaries’ face-to-face dealings with their customers and marketing of products to consumers place them in a position to contribute to strengthening the financial awareness of the public on insurance matters. Supervisors may therefore wish to encourage insurance intermediaries to promote financial awareness.

18.0.25 A variety of means may be used by insurance intermediaries to promote financial awareness, such as:

- explaining face-to-face the features of products in which customers may be interested, which may be particularly important where their interest is in complex or long term contracts;
- providing references to specific websites or other reference material which gives relevant information, or publishing such material themselves;
- making available, or suggesting other sources of, financial tools such as on-line calculators which estimate premiums or coverage levels; or
• participating in educational initiatives such as training seminars.

18.0.26 In undertaking financial education initiatives, intermediaries should ensure that the personnel involved have sufficient knowledge for this purpose and that material or tools provided are up to date, free from error to the extent practicable, and easily understood. Such initiatives may target specific audiences, such as vulnerable groups.

18.0.27 Intermediaries’ initiatives to promote financial awareness, where conducted with professionalism, may help to enhance both their own reputation and that of the insurance sector.

**Additional ICPs applicable to the supervision of intermediaries**

18.0.28 ICP 19 (Conduct of Business) addresses conduct of business supervision in respect of both intermediaries and insurers, whereas this ICP addresses other aspects of supervision that are specific to intermediaries. Other ICPs that apply, generally or in part, to the supervision of intermediaries are:

• ICP 21 Countering Fraud in Insurance; and
• ICP 22 Anti-Money Laundering and Combating the Financing of Terrorism (AML/CFT).

**Supervisory cooperation**

18.0.29 In some jurisdictions, the supervision of insurance intermediaries is the responsibility of a different authority than the insurance conduct of business supervisory authority. Even where the same authority is responsible for conduct of business and intermediary supervision, the supervisory responsibilities are often undertaken within different departments. Where different authorities or departments are involved, the insurance intermediary supervisor should communicate, and cooperate where possible, with other relevant authorities and departments to ensure an understanding of all the risks relevant to their supervision of insurance intermediaries.

**18.1 The supervisor requires insurance intermediaries operating in its jurisdiction to be licensed.**

18.1.1 In some jurisdictions other terminology such as “authorisation” or “registration”, are used in place of “licensing”. For the purposes of this ICP these terms are collectively referred to as “licensing”.

18.1.2 The supervisor may choose to license intermediaries at the legal entity level or the individual level, or both. In some jurisdictions insurance intermediation activities carried out by the insurer’s direct sales staff or its authorised representatives are covered by the insurer’s licence; in others these may require separate intermediary licensing.

18.1.3 Where licensing is at the legal entity level the supervisor may consider whether the legal entity has in place procedures to ensure that the individuals who conduct insurance intermediation under its responsibility meet appropriate standards of professionalism and competence. The supervisor may also wish to set its own requirements for approval of
individuals, within an insurance intermediary, who conduct intermediary business.

18.1.4 Different types of insurance business involve different levels of complexity and risks and may require different levels of skill and experience in their intermediation. The supervisor may wish to specify in the licence the range of intermediation activities that it permits the insurance intermediary to undertake, taking into account, for example, the intermediary’s proposed business plan and areas of expertise.

18.1.5 The licensing process should be designed to enable the supervisor to reject a licence application where it considers that the applicant will be incapable of delivering fair consumer outcomes or where it cannot be effectively supervised. For these purposes the supervisor may require an application, together with additional information that may depend on the type of licence being applied for, and may include items such as:

- details of ownership, including all information necessary to provide a full understanding of the insurance intermediary’s ownership and control structure;
- a business plan, including details of proposed business and financial projections;
- the proposed sources and method of capitalisation;
- information on personnel, in particular on proposed holders of key functions;
- details of any significant third party service providers;
- details of the proposed auditor, where applicable;
- details of professional indemnity insurance cover, including amount and limitations, or comparable guarantee, where applicable;
- business continuity plans;
- if incorporated, relevant information on incorporation such as memorandum and articles of association and certificate of incorporation;
- details of policies, procedures and controls in key areas such as:
  - new business;
  - client money;
  - complaints;
  - conflicts of interest;
  - compliance;
  - combating financial crime (including AML/CFT and fraud); and
  - a copy of the policy and supporting documents that govern the insurance intermediary’s conduct of business, or
The supervisor may require additional information to complete the licensing process, upon request.

18.1.6 The supervisor may set minimum financial resource requirements, for example, to discourage market entrants with insufficient financial resources and to help ensure that existing licensees have sufficient financial resources for business continuity purposes. Where this is the case, such requirements may take into account factors such as the nature of the business to be intermediated, whether the intermediary operates client accounts, the level of any professional indemnity insurance and the level of operating expenses, to ensure that an appropriately risk-based financial resource requirement is set.

18.1.7 The supervisor should only issue a licence if the applicant meets the initial licensing conditions.

18.1.8 In specific and limited circumstances, the supervisor may have the power to make exceptions to certain licensing requirements. The supervisor should ensure that any such exceptions do not encourage regulatory arbitrage or increase the risk to consumers.

18.1.9 The supervisor should consider what licensing requirements are applicable to intermediaries operating on a cross-border basis from outside the jurisdiction. These requirements should be transparent to consumers, as well as to intermediaries, so that they can make an informed decision when choosing to deal with intermediaries from other jurisdictions.

18.1.10 The supervisor may consider the possibility of issuing periodically renewable licences. An advantage of doing so would be to ensure formal periodic reassessment of compliance with the regulatory licensing requirements.

18.2 The supervisor ensures that insurance intermediaries licensed in its jurisdiction are subject to ongoing supervisory review.

18.2.1 The supervisor should require that initial licensing conditions, as applicable, are maintained subsequent to the licence being issued and that ongoing regulatory requirements are met. Where another authority is responsible for setting the licensing requirements, the supervisor should communicate, and cooperate where possible, with this authority.

18.2.2 The supervisor may choose to take a risk-based approach in reviewing on a targeted basis whether insurance intermediaries fulfil their licensing and conduct of business requirements on an ongoing basis. Under such an approach, supervisory review should take into account the differing size of intermediaries, their likely impact on the market and the riskiness and complexity of their business.

18.2.3 In addition to monitoring ongoing compliance, the supervisor should require that any breaches in licensing conditions or other supervisory requirements are reported promptly.

Direct supervision
18.2.4 Direct ongoing supervision may take various forms, both off-site monitoring and on-site inspection, as necessary, as well as other supervisory tools. Further information on this topic is available in ICP 9 Supervisory Review and Reporting, but may require adaptation to make it appropriate for the specific nature of intermediary business. The balance between off-site and on-site approaches will typically be influenced by the number and nature of intermediaries in the market, as well as the supervisor’s resources. The supervisor may take these factors into account when determining the balance between a proactive and reactive approach to ongoing supervision.

18.2.5 Off-site monitoring may include supervisory reporting, analysis of complaints, thematic reviews and other forms of information. The supervisor may specify information to be provided for off-site monitoring purposes, including information to be reported routinely or on an ad hoc basis. Supervisory reporting requirements may include:

- financial statements, audited where applicable, or other certification of the financial soundness of the intermediary;
- auditor’s management letter, where applicable;
- confirmation of professional indemnity cover (including exclusions or limitations) or comparable guarantee;
- information on the sources of and placement of business;
- summary of movements on client money accounts, where applicable;
- changes in key functions and significant owners;
- financial links with insurers and other intermediaries (such as through related party structures or service contracts);
- types of products sold;
- business partners;
- staff compensation policy;
- incentive arrangements;
- claims data;
- complaints data; and
- details of advertising and marketing expenditure relating to particular types of products or distribution channels.

18.2.6 Where the intermediary is an employee of the insurer, the supervisor may determine that information provided by the insurer as part of the insurer’s regular reporting responsibilities is sufficient, without requiring separate reporting in respect of the intermediation activities conducted by the employee of the insurer.

18.2.7 The supervisor may also use regular formal meetings with intermediaries as a means of supplementing these off-site and on-site processes and procedures. Where appropriate, the supervisor may use other tools, such as “mystery shopping”, to evaluate whether the implementation of
intermediaries’ internal policies and processes is resulting in fair outcomes for customers.

18.2.8 Where applicable, the supervisor should apply supervisory review processes and procedures to insurance intermediaries at the level at which licensing takes place (entity or individual level) or at the insurer level. Reporting requirements in respect of an insurer’s direct sales staff would be the responsibility of the insurer.

18.2.9 On-site inspections may consider areas such as:

- corporate governance framework, including internal controls;
- procedures and controls for combating financial crime;
- review of client money accounts where applicable;
- review of customer files;
- review of complaints;
- review of disclosure to customers and terms of business agreements;
- review of documentation of advice given and the reasons for that advice; and
- other relevant elements such as the strategy, business activities and business models, the treatment of customers, and compliance with supervisory requirements.

18.2.10 Analysis of complaints may be a valuable source of information for the supervisor, as well as for insurers and intermediaries, in identifying possible risks of poor conduct in the area of insurance intermediation.

18.2.11 The supervisor may take a risk-based approach, where greater attention is focused on higher risk areas. Examples include where:

- Insurance intermediation includes the provision of advice;
- the nature of the business intermediated is more complex;
- customers are less sophisticated; and
- there is an increased likelihood of conflicts of interest.

*Indirect supervision*

18.2.12 In some jurisdictions intermediaries are supervised indirectly through the supervision of the insurers. The supervisor will need to take into account the extent to which such an approach achieves effective supervision. Regardless of the approach, it is ultimately the supervisor’s responsibility that intermediaries are effectively supervised.

18.2.13 An indirect approach may be more appropriate for agency intermediation rather than the broker model.

18.2.14 Indirect supervision can relate to circumstances where the insurer relies upon an intermediary to perform processes on its behalf. In such cases, written agreements could be checked by the supervisor to assess the respective responsibilities. For example, insurers are expected to obtain appropriate documentation regarding their customers to demonstrate...
that appropriate customer due diligence and/or fact-finding procedures have been carried out. Insurers will be assessed on the adequacy of the processes carried out and documentation obtained, including where the insurer relies upon intermediaries to perform this work and supply the documentation required.

18.2.15 Where the supervision of intermediaries is undertaken indirectly, the supervisor should assess the insurer’s processes to monitor the work undertaken by an intermediary on its behalf.

Self-regulatory organisations

18.2.16 A self-regulatory organisation (SRO) can be described as a non-government organisation that has the power to create and enforce industry or professional regulations and standards. The self-regulatory functions of an SRO can contribute to the supervision of intermediaries through the requirements for, and enforcement of, professional standards for its members.

18.2.17 In jurisdictions with an SRO for intermediaries, the supervisor should assess whether the SRO meets appropriate standards before placing any reliance on the SRO’s self-regulatory functions. The supervisor’s assessment should consider matters such as whether the SRO:

- has sufficient independence;
- has appropriate powers and resources to fulfil its mission and provide effective self-regulation;
- performs its self-regulatory functions adequately;
- establishes and maintains standards that are sufficiently robust; and
- takes appropriate action to deal with any shortcomings.

18.2.18 An SRO’s regulations and standards may not address all the aspects of the supervision of insurance intermediaries for which the supervisor has responsibility. Therefore, whilst the supervisor may choose to place some reliance on the self-regulatory functions of an SRO, the supervisor should retain overall responsibility for supervision.

Other

18.2.19 In addition to direct and indirect supervision of intermediaries, the supervisor may use the supervision of insurers to gather information on and, to some extent, monitor intermediaries’ activities. This may include, for example, identifying whether particular intermediaries or particular matters are the subject of regular or frequent complaints.

18.3 The supervisor requires insurance intermediaries to maintain appropriate levels of professional knowledge and experience, integrity and competence.

Professional knowledge and experience

18.3.1 It is important that individuals carrying out the activity of insurance intermediation have adequate professional knowledge. Professional knowledge can be gained from experience, education and/or training.
The attainment of relevant professional qualifications may demonstrate that a certain level of professional knowledge has been achieved.

18.3.2 The supervisor should require that individuals carrying out the activity of insurance intermediation have professional knowledge and experience appropriate for the business which they intermediate. More complex products or customer needs may require higher or more specialised knowledge and experience. The knowledge and experience of individuals should also be appropriate for the type of business being intermediated. Once professional qualifications have been achieved, it is important that individuals who continue to carry out the activity of insurance intermediation keep their professional knowledge up to date. In some jurisdictions, there are supervisory or statutory requirements that individuals carrying out the activity of insurance intermediation should spend a specified minimum amount of time on continuous professional development. In some jurisdictions, professional bodies impose such a requirement on their members.

18.3.3 The supervisor may consider recognising the qualifications of specified professional bodies. Where a jurisdiction has no such professional body, consideration could be given to encouraging or recognising qualifications obtained through professional bodies in other jurisdictions. The supervisor may also consider recognising such qualifications where these are considered to be equivalent to, or exceed, the qualifications available within the jurisdiction.

18.3.4 Intermediaries should be knowledgeable regarding the status of the insurers whose products they sell. For example, they should be satisfied that the insurer is licensed to sell insurance in the relevant jurisdiction, as a branch or subsidiary, and should be aware of the financial status and credit rating of the insurer and the applicability of any policyholder protection schemes to that insurer’s products.

**Integrity**

18.3.5 It is essential that those carrying out the activity of insurance intermediation act with integrity and high ethical standards. These relate to the behaviour of the individuals concerned, such as:

- being honest, trustworthy and open;
- being reliable, dependable and respectful;
- not taking unfair advantage;
- not accepting or offering gifts where this might imply an improper obligation.

18.3.6 The supervisor may require individuals carrying out the activity of insurance intermediation to be subject either to their organisation’s internal policies and processes, or to the ethical standards of professional bodies, that require integrity.

18.3.7 The supervisor may establish its own expectations on integrity through, for example, the publication of codes of conduct with which such individuals are required to comply. Codes of conduct should be complementary to the relevant legislation and may address any aspect of dealings between insurance intermediaries and their customers.
18.3.8 Intermediary organisations should have procedures to assess the integrity of those intermediating on their behalf. Such procedures should include pre-employment checks as well as ongoing requirements. Pre-employment checks should include, amongst other things, employment history, any civil liability, criminal convictions, administrative actions by regulatory agencies and self-regulatory organisations, or pending legal proceedings.

Competence

18.3.9 The supervisor should require individuals carrying out the activity of insurance intermediation to act only in respect of business for which they have the required competence.

18.3.10 The supervisor should require insurance intermediaries to implement policies and processes to assess the competence of individuals carrying out the activity of insurance intermediation. Assessment would be particularly important in the case of new employees or where staff are assigned different or more challenging responsibilities. Competence should also be monitored as an ongoing process for all relevant staff. This may include actions such as:

- observed interviews with customers;
- review of customer files;
- internal interviews; and/or
- coaching.

18.3.11 An on-site inspection may provide an opportunity for the supervisor to assess competence, such as through file reviews and interviews of selected staff.

Role of professional standards

18.3.12 SROs and other professional bodies can be instrumental in promoting professional standards where they issue standards or codes with which their members are required to comply. Standards required by relevant SROs or other professional bodies may include areas such as:

- acting with high ethical standards and integrity;
- acting in the best interests of each client;
- providing a high standard of service; and
- treating customers fairly.

18.3.13 Members of an SRO or other professional body who are found to be in breach of its professional standards may be subject to disciplinary procedures such as suspension of, or exclusion from, membership.

18.3.14 In jurisdictions where there is reliance on the membership of a professional body, the supervisor may consider confirming that such a body has an effective disciplinary scheme in force. The supervisor may nevertheless decide not to depend on such professional processes entirely and deal with issues of an individual's professional conduct directly.
18.4 The supervisor requires that insurance intermediaries apply appropriate governance.

18.4.1 An insurance intermediary’s governance framework may vary, depending upon the nature and scale of the intermediary and the complexity of its business, and may be subject to general company law. However, each intermediary’s governance framework should be sufficient to provide for sound and prudent management of the business and to support the fair treatment of customers.

18.4.2 In setting relevant governance requirements the supervisor should consider the application of such requirements to sole traders and small businesses operating as insurance intermediaries. Such requirements for sole traders and small businesses will differ from those for larger entities. Key areas where requirements may vary include internal controls, segregation of duties, and compliance functions. Regardless, the supervisor should be satisfied that a sound level of governance is achieved and that there are no unacceptable risks, with the overriding objective that customers are appropriately protected.

18.4.3 Good governance may be promoted by the supervisor, as well as other authorities, professional bodies and SROs, by publishing guidance (for example, a Code of Practice) for insurance intermediaries on their obligations in respect of governance-related matters. Guidance that may help intermediaries meet governance requirements may include matters such as:

- ensuring that those responsible for the intermediary organisation’s governance have the competence and integrity to fulfil their respective roles;
- ensuring appropriate standards for conduct of business;
- ensuring there is regular monitoring of consumer outcomes;
- ensuring that the making of key decisions is subject to sufficient discussion at Board level or with Key Persons in Control Functions as appropriate;
- ensuring adequate human resources to conduct the business;
- ensuring an appropriate level of internal controls of the business;
- ensuring appropriate disciplinary policies and processes for wrongdoing are in place;
- maintaining adequate files and records and ensuring their availability for inspection;
- maintaining appropriate controls over outsourced functions; and
- compliance with all relevant legislation, including non-insurance legislation such as in respect of anti-money laundering, fraud, etc.
18.4.4 Relevant to governance, intermediaries are required to establish and implement policies and processes on the fair treatment of customers that are an integral part of their business culture (see Standard 19.2).

18.4.5 The governance of an insurer’s direct sales staff is the responsibility of the insurer, and the governance of insurers is the subject of ICP 7 (Corporate Governance). Although ICP 7 is otherwise not directly applicable to intermediaries, it may be a useful source of information for intermediary supervisors.

18.5 The supervisor requires insurance intermediaries to disclose to customers, at least:

- the terms and conditions of business between themselves and the customer;
- the relationship they have with the insurers with whom they deal; and
- information on the basis on which they are remunerated where a potential conflict of interest exists.

18.5.1 In addition to disclosing matters relating to intermediaries themselves, intermediaries are required to disclose information on insurance products offered to customers (see Standards 19.5 and 19.6).

18.5.2 In setting disclosure requirements, the supervisor may take into account that there are differences in:

- the nature of different insurance products;
- the level of sophistication of different customers; and
- the way in which different types of insurance are transacted (for example, differences between commercial and personal (retail) lines).

The nature, timing and detail of disclosures may differ according to the circumstances. Nevertheless, disclosure requirements should provide adequate information to customers, taking into account these factors.

*Terms of business*

18.5.3 A terms of business agreement may be a convenient means by which an insurance intermediary can provide important information to a customer and satisfy many of the disclosure requirements. Such a document may include information such as:

- by whom they are licensed and supervised;
- the type of business for which they are licensed;
- whether they are independent or act on behalf of one or more insurers;
- information on the basis on which they are remunerated;
- the services provided, including whether they offer products from a full range of insurers, from a limited range or from a single insurer;
• charging arrangements for the intermediation services;
• cancellation rights in respect of the intermediation services;
• notification of complaints;
• client money arrangements, including treatment of interest;
• confidentiality of information provided; and
• the relevant law governing the agreement.

18.5.4 Insurance intermediaries should provide information on terms of business to customers and do so prior to an insurance contract being entered into. Where there is an ongoing business relationship between an intermediary and a customer, or once terms of business information has initially been provided in the case of policy renewals, the intermediary should review whether reiterating this information is necessary. Further information on terms of business might only be necessary where there are changes to the terms.

18.5.5 When insurance cover needs to be arranged immediately it may not be possible to provide documentation of terms of business at the point of arranging the contract. In such situations the information may be provided orally and followed up with written documentation within a reasonable period of time.

18.5.6 The supervisor may recommend, or require, that a copy of the terms of business, signed by the customer, is retained as part of the insurance intermediary’s records. Where insurance is intermediated over the internet, the customer may be required to acknowledge the terms of business before a policy can be proceeded with. Electronic records should also be retained by the intermediary.

Intermediary status

18.5.7 An insurance intermediary’s status may provide information to a customer on the extent of products from which recommendations are made and provide an indication of potential conflicts of interest. Where the insurance intermediary is only able to select products from a single insurer or from a limited range, the customer may wish to carry out their own research to see whether they can obtain better terms or a more suitable product elsewhere in the market.

18.5.8 It is particularly important that insurance intermediaries provide customers with information on their relationship with the insurers with whom they deal, specifically whether they are independent or act for one or more insurance companies, and whether they are authorised to conclude insurance contracts on behalf of an insurer or not.

18.5.9 Potential conflicts of interest can arise for some intermediaries if the intermediary is part of a wider group or if the intermediary has a financial interest, such as a shareholding, in an insurer or insurance group. Such relationships should be disclosed to customers.

18.5.10 Information on the insurance intermediary’s status may be provided as part of a terms of business agreement or separately. Because of its importance, this information may also be highlighted verbally to the customer.
Remuneration

18.5.11 Insurance intermediaries are generally remunerated by way of fees and commissions, such as:

- fees paid directly by the customer;
- fees or commissions paid indirectly by the customer, by way of deduction from premiums or funds invested; or
- fees or commissions paid by the insurer.

18.5.12 Where insurers’ direct sales staff carry out insurance intermediation as employees of the insurer, they may be salaried as well as receive any applicable commission.

18.5.13 Information on charging structures may be important information to customers. For example, for insurance products with an investment element, information on any fees or other costs deducted from the initial amount invested, as well as on fees or commissions deducted from the investment thereafter will be important.

18.5.14 Information on charging may be provided as part of a terms of business agreement, or separately. As fees and commissions vary by product and between product providers, they may need to be provided separately for each product recommended, often by inclusion in product documentation. Given their significance to some types of product, this information may also be highlighted verbally to the customer.

18.5.15 The supervisor may also require that, upon a customer’s request to the intermediary, the customer is provided with further information on fees and commissions, including the level of fees and commissions. The intermediary should make the customer aware of his/her right to request information on fees and commissions. Communication should be clear and not misleading. In view of the impact of fees and commissions upon insurance products with an investment element, the supervisor may require that disclosure of fees and commissions is provided to customers prior to contracts being entered into in respect of all such products.

18.5.16 Some forms of remuneration of insurance intermediaries potentially lead to a conflict of interest. For example, an intermediary may be tempted to recommend a product which provides higher fees or commissions than another. Potential conflicts of interest for intermediaries may exist in a variety of circumstances (see ICP 19 Conduct of Business).

18.5.17 The supervisor should be satisfied that the intermediary has robust procedures in place to identify and avoid, or manage, conflicts of interest, and deliver outcomes aligned with customers’ best interests. Where they cannot be avoided, or managed satisfactorily, this would result in the intermediary declining to act. Conflicts of interest may be managed or avoided in different ways depending on the nature and severity of the conflict of interest (see Application Paper on Supervising the Conduct of Intermediaries).

18.5.18 Additionally, circumstances in which conflicts of interest may arise may be covered in the codes of conduct issued by SROs or other professional bodies.
18.5.19 The supervisor should be aware of the use of non-monetary benefits, including, for example, “soft” commissions, offered by insurers to intermediaries. These may include less tangible inducements such as professional support, IT support, or corporate entertainment at sporting or cultural events. Such inducements may lead to conflicts of interest and are less transparent than fees or commissions and also need to be avoided, managed or prohibited as appropriate.

18.6 The supervisor requires an insurance intermediary who handles client monies to have safeguards in place to protect these funds.

18.6.1 In the course of carrying out its business, an insurance intermediary may:

- receive monies from a client for the payment of premiums to an insurer; and/or
- receive monies from an insurer in respect of claims or refunded premiums for onward payment to a client.

18.6.2 Some jurisdictions have specific legal requirements in respect of the cash flows where monies are transferred via an intermediary from the customer to the insurer, and vice versa, including in determining whether the customer or the insurer is at risk in respect of such funds.

18.6.3 Where funds are held at the risk of the client, they may be referred to as “client monies” or “client’s money”. The intermediary should have adequate policies and processes in place for the safeguarding of such funds in the interests of their customers.

18.6.4 In some jurisdictions, premiums are deemed to have been paid to the insurer as soon as the customer pays premiums to the intermediary. In these circumstances the insurer, rather than the customer, bears the risk of allowing intermediaries to collect premiums on its behalf.

18.6.5 The supervisor may require that an insurance intermediary’s client money policies and processes cover matters such as the following:

- client accounts are separate and clearly distinguishable from the intermediary’s own bank accounts;
- client accounts are held with licensed banks within the jurisdiction, or specified other jurisdictions;
- disallowing monies other than client monies within the account, except in specific circumstances such as to achieve or maintain a minimum balance, to receive interest, or to receive commission due to the intermediary;
- monies are paid into the account promptly;
- adequate financial systems and controls are maintained, including authorisation of payments from the account;
- adequate books and records are maintained and subject to audit;
- reconciliations are performed on a regular basis and reviewed;
discrepancies on the account are followed up promptly and resolved satisfactorily;

for each client, payments from a client account are not made before sufficient monies paid into the account have cleared, thus ensuring that any balance held in respect of each client is not negative; and

the treatment of interest.

18.6.6 In the interest of safeguarding clients’ money, it is important that client accounts cannot be used to reimburse creditors of the insurance intermediary.

18.6.7 Where insurance intermediaries operate client accounts, the supervisor may require that the terms and conditions of such accounts are disclosed to their customers, including whether funds held in such accounts are at the risk of clients or at the risk of the insurer.

18.7 Where appropriate, the supervisor takes supervisory measures against licensed insurance intermediaries.

18.7.1 The supervisor should initiate measures to prevent or respond to poor conduct or breaches of regulatory requirements by an intermediary, with a view to mitigating adverse outcomes for customers. Where necessary, the supervisor may use sanctions.

18.7.2 The supervisory framework should allow for the exercise of judgement and discretion, and provide flexibility in the use of preventive measures, corrective measure and sanctions.

18.7.3 In some instances, the supervisor may need to work with other relevant authorities or bodies in order to take or enforce supervisory measures or sanctions against an intermediary.

Preventive measures

18.7.4 Where the supervisor assesses that there may be a material risk of an insurance intermediary breaching supervisory requirements or to consumer or policyholder interests in general, it should require insurance intermediaries to take appropriate measures to mitigate both market-wide risks as well as risks from specific entities or individuals.

18.7.5 In this regard, the supervisor may take proactive measures, such as publishing guidance on good practices or warnings to the industry or consumers.

Corrective measures

18.7.6 Where the insurance intermediary fails to meet supervisory requirements, or where consumers may otherwise be at risk, the supervisor should require corrective measures to be taken by the insurance intermediary. This may occur, for example, where:

- there is evidence of unfair treatment;
- required information is not provided to customers;
- policies and processes are inadequate (particularly where this results in inadequate due diligence work);
• internal controls, file keeping or documentation are inadequate;
• conflicts of interest are not adequately identified or managed; or
• there are concerns over business continuity.

18.7.7 Supervisory measures should apply at either the entity level or individual level, as appropriate. These may include, for example:
• requiring the implementation of enhanced policies and processes;
• requiring further training;
• restricting business activities;
• suspending or barring specific individuals from engaging in intermediary business or being responsible for the corporate governance of an intermediary organisation; or
• suspending, revoking or not renewing the licence.

Sanctions

18.7.8 Where appropriate, the supervisor should impose sanctions on entities or individuals. The range of sanctions may include, for example:
• imposing fines;
• barring individuals from acting in key roles or holding similar roles in the future; or
• requiring remediation, including compensation to policyholders where appropriate.

18.7.9 Sanctions imposed should be commensurate with the nature and severity of the shortcomings. Minor offences may be dealt with through oral or written communications with the intermediary’s management and then followed up, whereas more significant deficiencies may warrant immediate or more significant action.

18.7.10 Jurisdictions should provide due process for an intermediary to appeal supervisory measures.

18.8 The supervisor checks that the intermediary is taking the measures required and escalates such measures if its concerns are not being addressed.

18.8.1 The supervisor should review the results of measures that it has required of an intermediary and the effectiveness of the actions taken.

18.8.2 If the action taken by the intermediary does not adequately address the supervisor’s concern, the supervisor should require further measures.

18.8.3 Supervisory measures should be escalated in line with the supervisor’s concern about the intermediary and the risk to consumers.

18.9 The supervisor takes measures against individuals or entities that conduct insurance intermediation without the necessary licence.
18.9.1 The supervisor should have in place mechanisms to identify when unlicensed insurance intermediation is being carried out. Examples of such mechanisms include monitoring media and advertising, review of consumer complaints and encouraging industry and other stakeholders to notify the supervisor of suspicious activity.

18.9.2 When unlicensed insurance intermediation is identified, the supervisor should act to address the issue. Examples include seeking court orders to require the unlicensed individual or entity to stop the activity, informing law enforcement authorities of criminal and/or civil concerns, and publicising the fact that the individual/entity is not licensed to conduct insurance intermediation.
ICP 19  Conduct of Business

The supervisor requires that insurers and intermediaries, in their conduct of insurance business, treat customers fairly, both before a contract is entered into and through to the point at which all obligations under a contract have been satisfied.

Introductory Guidance

19.0  Requirements for the conduct of insurance business help to:

- protect policyholders and promote fair consumer outcomes;
- strengthen public trust and consumer confidence in the insurance sector;
- minimise the risk of insurers and intermediaries following business models that are unsustainable or pose reputational risk, thereby complementing the risk management framework of a solvency regime; and
- support a sound and resilient insurance sector by creating level playing fields in terms of the basis on which insurers and intermediaries can compete while maintaining business practices that support the fair treatment of customers.

19.0.2  Fair treatment of customers encompasses achieving outcomes such as:

- developing, marketing and selling products in a way that pays due regard to the interests and needs of customers;
- providing customers with information before, during and after the point of sale that is accurate, clear, and not misleading;
- minimising the risk of sales which are not appropriate to customers’ interests and needs;
- ensuring that any advice given is of a high quality;
- dealing with customer claims, complaints and disputes in a fair and timely manner; and
- protecting the privacy of information obtained from customers.

19.0.3  Conduct of business, including business practices, is closely linked with jurisdictions’ tradition, culture, legal regime and the degree of development of the insurance sector. For this reason, supervisory approaches to the conduct of business also tend to vary. Such diversity should be taken into consideration in implementing this ICP, and related standards and guidance material, in order to achieve the outcome of fair treatment of customers. The fair treatment of customers encompasses concepts such as ethical behaviour, acting in good faith and the prohibition of abusive practices.

19.0.4  Requirements for the conduct of insurance business may differ depending on the nature of the customer with whom an insurer or intermediary interacts and the type of insurance provided. The scope of
requirements for conduct of insurance business should reflect the risk of unfair treatment of customers, taking into account the nature of the customer and the type of insurance provided.

19.0.5 As part of assessing the fulfilment of requirements for conduct of insurance business, the supervisor should consider the consumer outcomes that are being achieved under these requirements. This includes consumer outcomes that arise due to industry-wide — as well as insurer-specific — factors.

19.0.6 Supervisors may wish to issue guidelines or rules on their expectations to help insurers and intermediaries achieve fair treatment of customers. In addition, the supervisor could support industry guidelines or best practices with this objective.

19.0.7 Detailed conduct of business rules may not be appropriate for reinsurance transactions, where benefits under a policy are not affected by the reinsurance arrangements (see ICP 13 Reinsurance and Other Forms of Risk Transfer). Nonetheless, this does not relieve insurers and reinsurers of their duty to provide each other with complete and accurate information.

Respective responsibilities

19.0.8 The insurer has a responsibility for good conduct throughout the insurance life-cycle, as it is the insurer that is the ultimate risk carrier. However, where more than one party is involved in the design, marketing, distribution and policy servicing of insurance products, the good conduct in respect of the relevant service(s) is a shared responsibility of those involved.

19.0.9 Intermediaries typically play a significant role in insurance distribution but may also be involved in other areas. Their interface between customers and insurers gives them a key role, and their good conduct in performing the services in which they are involved is critical in building and justifying public trust and confidence in the insurance sector.

19.0.10 Insurers sometimes outsource specific processes, such as claims handling, to third parties (including intermediaries). Where an insurer outsources processes, the insurer should only deal with third parties whose policies, procedures and processes are expected to result in fair treatment of customers; the insurer retains ultimately responsibility for those functions.

Cross-border and group considerations

19.0.11 Legislation should provide requirements with which insurers and intermediaries must comply, including foreign insurers and intermediaries selling products on a cross-border basis.

19.0.12 Effective assessment of the quality of conduct of insurance business requires, to a large extent, supervisory consideration of strategies, policies, processes, procedures and controls that apply to the provision of insurance products and services to customers, and which are more easily assessed through supervision at the insurance legal entity, rather than group, level.
19.0.13 Where insurance legal entities are part of an insurance group, the application of appropriate policies and processes on conduct of business should be consistent across the group, recognising local requirements and specificities, and should result in the fair treatment of customers on a group-wide basis. In addition, there are a number of other group-related aspects that are relevant to the supervision of conduct of business by insurers and intermediaries, such as:

- public disclosure by the supervisor of the regulatory requirements in respect of the offering of cross-border insurance;
- disclosure to customers of the group to which an underwriter belongs; and
- the potential risks from group entities that could affect policies being sold or administered.

The supervisor should consider the implications arising from group structures in applying the Standards of this ICP.

Supervisory cooperation

19.0.14 Supervisors should be aware of the conduct of business requirements set by the regulators of other financial services sectors with a view to minimising unnecessary inconsistencies, possible duplication and the potential for regulatory arbitrage.

19.0.15 In some jurisdictions responsibility for the supervision of insurers or intermediaries is shared between more than one authority, or between different departments within a single authority, with different authorities or departments responsible for conduct and prudential supervision. Where this is the case, the relevant authorities or departments should communicate, and cooperate where possible, to ensure that there is an understanding of all the relevant risks.

19.0.16 The supervisor should also consider having in place adequate coordination arrangements to deal with conduct of business issues arising in cross-border business.

Fair treatment of customers

19.1 The supervisor requires insurers and intermediaries to act with due skill, care and diligence when dealing with customers.

19.1.1 The supervisor should require insurers and intermediaries to have policies and processes in place to achieve this outcome, including taking appropriate measures to ensure that their employees and agents meet high standards of ethics and integrity.

19.2 The supervisor requires insurers and intermediaries to establish and implement policies and processes on the fair treatment of customers, as an integral part of their business culture.

19.2.1 Supervisors should require insurers and intermediaries to have policies and processes in place to achieve the fair treatment of customers and should monitor whether such policies and processes are adhered to.
19.2.2 Proper policies and processes dealing with the fair treatment of customers are likely to be particularly important with respect to retail customers, because of the greater asymmetry of information that tends to exist between the insurer or intermediary and the individual retail customer.

19.2.3 Supervisory requirements with respect to fair treatment of customers may vary depending on the legal framework in place in a particular jurisdiction. The desired outcome of fair treatment of customers may be achieved through a variety of approaches, with some jurisdictions favouring a principles-based set of requirements, some favouring a rules-based approach, and others following some combination of approaches.

19.2.4 Ensuring the achievement of fair outcomes for customers will tend to require that insurers and intermediaries adopt the fair treatment of customers as an integral part of their business culture, and that policies and processes to support this objective are properly embedded in the organisation. Embedding a culture of fair treatment of customers may include the following:

- **Strategy:** Fair treatment of customers should be an objective taken into consideration in the design of the business strategy, product design, product distribution, and product performance.

- **Leadership:** Overall responsibility for fair treatment of customers should be at the level of the Board and Senior Management, who should design, implement, and monitor adherence to, policies and processes aimed at ensuring that customers are treated fairly. This sets the tone for the business.

- **Decision making:** All decisions that impact on customers should be subject to particular scrutiny in terms of whether they support the fair treatment of customers.

- **Internal controls:** Monitoring the fair treatment of customers requires relevant management information to be identified, collected and evaluated. Internal reports should include the most useful information and indicators to allow the Board and Senior Management to measure the insurer’s or intermediary’s performance with respect to fair treatment of customers. Mechanisms and controls should be established to ensure that departures from policies and processes as well as other situations that jeopardise the interests of customers, are promptly remedied.

- **Performance management:** Appropriate attention should be paid to the recruitment of staff and agents who meet high standards of ethics and integrity. Relevant staff should be trained to deliver appropriate outcomes in terms of fair treatment of customers. Evaluation of performance should include the contribution made to achieving these outcomes.
There should be appropriate performance management consequences for staff who fail to meet these standards.

- **Reward:** Remuneration and reward strategies should take account of the fair treatment of customers. Reward structures need to reflect quality issues and not encourage or reward the unfair treatment of customers. Remuneration structures that create conflicts of interest may lead to poor customer outcomes.

19.2.5 Insurers’ and intermediaries’ strategies, policies and processes dealing with the fair treatment of customers should be made available to the supervisor. The supervisor should encourage insurers and intermediaries to make relevant policies and processes publicly available as good practice, in particular their claims handling, complaints handling and dispute resolution policies and processes.

19.3 The supervisor requires insurers and intermediaries to avoid or properly manage any potential conflicts of interest.

19.3.1 In their dealings either with each other or with customers, insurers and intermediaries may encounter conflicts of interest.

19.3.2 Where conflicting interests compete with duties of care owed to customers, they can create risks that insurers and intermediaries will not act in customers’ best interests. Conflicts of interest can arise from compensation structures as well as other financial and non-financial incentives.

19.3.3 Where compensation structures do not align the interests of the insurer and intermediary, including those of the individuals carrying out intermediation activity, with the interests of the customer, they can encourage behaviour that results in unsuitable sales or other breach of the insurer’s or intermediary’s duty of care towards the customer.

19.3.4 Other incentives that may create a conflict of interest include performance targets or performance management criteria that are insufficiently linked to customer outcomes. They also include the soliciting or accepting of inducements where this would conflict with the insurer’s or intermediary’s duty of care towards its customers.

19.3.5 An inducement can be defined as a benefit offered to an insurer or intermediary, or any person acting on its behalf, incentivising that firm/person to adopt a particular course of action. This may include cash, cash equivalents, commission, goods and hospitality. Where intermediaries who represent the interests of customers receive inducements from insurers, this could result in a conflict of interest that could affect the independence of advice given by them.

19.3.6 As an insurance intermediary interacts with both the customer and the insurer, an intermediary is more likely than an insurer to encounter conflicts of interest. For an insurance intermediary, examples of where a conflict of interest may occur include:

- where the intermediary owes a duty to two or more customers in respect of the same or related matters – the intermediary
may be unable to act in the best interests of one without adversely affecting the interests of the other;

• where the relationship with a party other than the customer influences the advice given to the customer;

• where the intermediary is likely to make a financial gain, or avoid a financial loss, at the expense of the customer;

• where the intermediary has an interest in the outcome of a service provided to, or a transaction carried out on behalf of, a customer which is distinct from the customer's interest;

• where the intermediary has significant influence over the customer's decision (such as in an employment relationship) and the intermediary's interest is distinct from that of the customer;

• where the intermediary receives an inducement to provide a service to a customer other than the standard or "flat" fee or commission for that service; and

• where the intermediary has an indirect interest in the outcome of a service provided to, or a transaction carried out on behalf of, a customer due to an association with the party that directly benefits (such as soliciting insurance products which are sold together with other financial services in a bancassurance relationship) and where such indirect interest is distinct from the customer's interest (such as the cross-selling or self-placement of business).

19.3.7 The supervisor should require that insurers and intermediaries take all reasonable steps to identify and avoid or manage conflicts of interest, and communicate these through appropriate policies and processes.

19.3.8 Appropriate disclosure can provide an indication of potential conflicts of interests, enabling the customer to determine whether the sale may be influenced by financial or non-financial incentives. It can thus help in managing conflicts of interest where it empowers consumers to identify and challenge or avoid potentially poor advice or selling that may arise through the conflict of interest. However, managing conflicts of interest through disclosure or obtaining informed consent from customers, has limitations, including where the customer does not fully appreciate the conflict or its implications, and could be seen to place an unreasonable onus on the customer.

19.3.9 Where conflicts of interest cannot be managed satisfactorily, this should result in the insurer or intermediary declining to act. In cases where the supervisor may have concerns about the ability of insurers and intermediaries to manage conflicts of interest adequately, the supervisor may consider requiring other measures.

19.4 The supervisor requires insurers and intermediaries to have arrangements in place in dealing with each other to ensure the fair treatment of customers.

19.4.1 The supervisor should require insurers to conduct business only with intermediaries that are licensed, and to verify that the intermediaries
under such arrangements have the appropriate knowledge and ability with which to conduct such business.

19.4.2 The supervisor may require insurers to report any significant issues of which they become aware and have transparent mechanisms to handle complaints against intermediaries. This may include identifying whether particular intermediaries or particular matters are the subject of regular or frequent complaints. Documentation on this will enable insurers to report recurring issues to the supervisor where the matters identified may be relevant to the supervisor’s assessment of the intermediaries concerned.

19.4.3 Supervisory measures to prevent or respond to a breach of regulatory requirements by an intermediary may include action against insurers in the case of direct sales or where an insurer knowingly cooperates with an intermediary that is in breach of its regulatory requirements.

19.4.4 Insurers and intermediaries should ensure that written agreements are established in respect of their business dealings with each other, to clarify their respective roles and promote the fair treatment of customers. Such agreements would include, where relevant, respective responsibilities on matters such as:

- product development;
- product promotion;
- the provision of pre-contractual and point of sale information to customers;
- post-sale policy servicing;
- claims notification and handling;
- complaints notification and handling;
- management information and other documentation required by the insurer;
- remedial measures; and
- any other matters related to the relationship with customers.

Product development and pre-contractual stage

19.5 The supervisor requires insurers to take into account the interests of different types of consumers when developing and distributing insurance products.

19.5.1 This can be achieved through a product approval approach, a “principles-based” approach or a combination of both. In a product approval approach, the supervisor requires insurers to submit insurance product proposals for supervisory review and approval prior to product launch. In a “principles-based” approach, the onus is placed on the insurer’s Board and Senior Management to ensure that products and distribution strategies are developed in accordance with the principles.

19.5.2 In some cases, product development is undertaken by intermediaries on behalf of insurers for whom they act. In such cases, the intermediaries involved are responsible for taking customers’ interests and needs into
account in performing this work. Nevertheless, the insurer should retain oversight of, and remains accountable for, the development of its products and its distribution strategies.

**Product approval approach**

19.5.3 Where supervisors have the power to approve contract conditions or pricing, the approval process should balance the protection of customers against the potential benefits to customers of innovation and choice in insurance products. For example, supervisory approval of contract conditions or pricing is likely to be more appropriate in certain circumstances, such as where the insurer is dealing with less financially-capable or vulnerable customers, where products are new to the market or complex, or insurance contracts that are required by law such as automobile liability insurance or health insurance.

19.5.4 In such situations the supervisor may review products for compliance with things such as:

- mandated policy limits;
- coverage of specified risks, procedures or conditions;
- absence of prohibited exclusions; and
- compliance with specifically required policy language.

**Principles-based approach**

19.5.5 Where supervisors follow a more principles-based approach, supervisors may issue guidance in terms of what is expected of insurers and intermediaries. This may include the following:

- Development of products and distribution strategies should include the use of adequate information to assess the needs of different consumer groups.
- Product development (including a product originating from a third party) should provide for a thorough assessment of the main characteristics of a new product and of the related disclosure documents by every appropriate department of the insurer.
- Before bringing a product or service to the market, the insurer should carry out a diligent review and testing of the product in relation to its business model, the applicable laws and regulations and its risk management approach. In particular, the policies, procedures and controls put into place should enable the insurer to:
  - offer a product that delivers the reasonably expected benefits;
  - target the consumers for whose needs the product is likely to be appropriate, while preventing, or limiting, access by consumers for whom the product is likely to be inappropriate;
ensure that distribution methods are appropriate for the product, particularly in light of the legislation in force and whether or not advice should be provided;

- assess the risks resulting from the product by considering, among other things, changes associated with the environment or stemming from the insurer’s policies that could harm customers; and

- monitor a product after its launch to ensure it still meets the needs of target customers, assess the performance of the various methods of distribution used with respect to sound commercial practices and, if necessary, take the necessary remedial action.

- Insurers should provide relevant information to intermediaries to ensure that they understand the target market (and thus reduce the risk of mis-selling), such as information related to the target market itself, as well as the characteristics of the product.

- The intermediary should, in return, provide information to the insurer on the types of customers to whom the product is sold and whether the product meets the needs of that target market, in order to enable the insurer to assess whether its target market is appropriate and to revise its distribution strategy for the product, or the product itself, when needed.

19.5.6 Supervisors may require insurers to submit specific information relating to the manner in which the development of insurance products complies with the legislated principles at any time, including prior to the launch of the product (pre-notification).

19.6 The supervisor requires insurers and intermediaries to promote products and services in a manner that is clear, fair and not misleading.

19.6.1 The insurer should be responsible for providing promotional material that is accurate, clear and not misleading not only to customers but also to intermediaries who may rely on such information.

19.6.2 Before an insurer or intermediary promotes an insurance product, it should take reasonable steps to ensure that the information provided is accurate, clear and not misleading. Procedures should provide for an independent review of promotional material intended for customers other than by the person or organisation that prepared or designed it. For example, where promotional material is developed by an intermediary on behalf of an insurer, the insurer should verify the accuracy of promotional material before it is used.

19.6.3 If an insurer or intermediary becomes aware that the promotional material is not accurate and clear or is misleading, it should:

- inform the insurer or intermediary responsible for that material;

- withdraw the material; and

- notify any person that it knows to be relying on the information as soon as reasonably practicable.
19.6.4 In addition, to promote products in a fair manner, the information provided by an insurer or intermediary should:

- be easily understandable;
- accurately identify the product provider;
- be consistent with the coverage offered;
- be consistent with the result reasonably expected to be achieved by the customers of that product;
- state prominently the basis for any claimed benefits and any significant limitations; and
- not hide, diminish or obscure important statements or warnings.

19.7 The supervisor requires insurers and intermediaries to provide timely, clear and adequate pre-contractual and contractual information to customers.

19.7.1 The insurer or intermediary should take reasonable steps to ensure that a customer is given appropriate information about a product in order that the customer can make an informed decision about the arrangements proposed. Such information is also useful in helping customers understand their rights and obligations after sale.

19.7.2 Where insurers use intermediaries for the distribution of insurance products, the insurer should be satisfied that the intermediaries involved are providing information to customers in a manner that will assist them in making an informed decision.

Timing of the provision of information to customers

19.7.3 Customers should be appropriately informed before and at the point of sale. Information should enable an informed decision to be made by the customer before entering into a contract. In determining what is “timely”, an insurer or intermediary should consider the importance of the information to the customer’s decision-making process and the point at which the information may be most useful.

Clear delivery of information to customers

19.7.4 Information should be provided in a way that is clear, fair and not misleading. Wherever possible, attempts should be made to use plain language that can easily be understood by the customer.

19.7.5 Mandatory information should be prepared in written format, on paper or in a durable and accessible medium (electronic, for instance).

19.7.6 Focus should be on the quality rather than quantity of information, as there is a risk that if the disclosure becomes too voluminous then the customer may be less likely to read the information.

19.7.7 The quality of disclosure may also be improved by the introduction of a standardised format for disclosure (such as a product information sheet), which will aid comparability across competing products and allow for a more informed choice. Standard formats should be tested to ensure that they help understandability.
19.7.8 There is likely to be an enhanced need for clear and simple disclosure for more complex or “bundled” products, which are difficult for consumers to understand, such as packaged retail insurance-based investment products (PRIIPS), particularly regarding the costs, risks involved and performance.

19.7.9 Insurers and intermediaries should be able to demonstrate to the supervisor that customers have received information necessary to understand the product.

Adequacy of information provided to customers

19.7.10 The information provided should be sufficient to enable customers to understand the characteristics of the product they are buying and help them understand whether and why it may meet their requirements.

19.7.11 The level of information required will tend to vary according to matters such as:

- the knowledge and experience of a typical customer for the policy in question;
- the policy terms and conditions, including its main benefits, exclusions, limitations, conditions and its duration;
- the policy’s overall complexity;
- whether the policy is bought in connection with other goods and services; and
- whether the same information has been provided to the customer previously and, if so, when.

Disclosure of product features

19.7.12 While the level of product information required may vary, it should include information on key features, such as:

- the name of the insurer, its legal form and, where relevant, the group to which it belongs;
- the type of insurance contract on offer, including the policy benefits;
- a description of the risk insured by the contract and of the excluded risks;
- the level of the premium, the due-date and the period for which the premium is payable, the consequences of late or non-payment, and provisions for premium reviews;
- the type and level of charges to be deducted from or added to the quoted premium, and any charges to be paid directly by the customer;
- when the insurance cover begins and ends; and
- prominent and clear information on significant or unusual exclusions or limitations. A significant exclusion or limitation is one that would tend to affect the decision of consumers generally to buy. An unusual exclusion or limitation is one that
is not normally found in comparable contracts. In determining what exclusions or limitations are significant, an insurer or intermediary should, in particular, consider the exclusions or limitations that relate to the significant features and benefits of a policy and factors which may have an adverse effect on the benefit payable under it. Examples of significant or unusual exclusions or limitations may include:

- deferred payment periods;
- exclusion of certain conditions, diseases or pre-existing medical conditions;
- moratorium periods;
- limits on the amounts of cover;
- limits on the period for which benefits will be paid;
- restrictions on eligibility to claim such as age, residence or employment; and
- excesses.

19.7.13 Where a policy is bought in connection with other goods or services, the premium should be disclosed separately from any other prices. It should be made clear whether buying the policy is compulsory and, if so, whether it can be purchased elsewhere.

19.7.14 For investment-based insurance products, information on investment performance is generally provided. Where this includes an indication of past, simulated or future performance, the information should include any limits on upside or downside potential and a prominent warning that past performance is not a reliable indicator of future performance.

19.7.15 A helpful means to ensure that accurate and comprehensible information is provided to the customer is a product information sheet containing information on key product features that are of particular significance to the conclusion or performance of the insurance contract. The product information sheet should be clearly identified as such and it should be pointed out to the customer that the information is not exhaustive. Insofar as the information concerns the content of the contract, reference should be made as appropriate to the relevant provisions of the contract or to the general policy conditions underlying the contract. Insurers, and intermediaries where they are involved, should consider the use of evaluation by third parties, such as consumer testing, in developing product information sheets in order to ensure their understandability.

Disclosure of rights and obligations

19.7.16 Retail customers, in particular, often have only limited knowledge about the legal rights and obligations arising from an insurance contract. Before an insurance contract is concluded, the insurer or intermediary, should inform a retail customer on matters such as:

- General provisions – including applicable law governing the contract;
- Obligation to disclose material facts – including prominent and clear information on the obligation on the customer to disclose
material facts truthfully. Ways of ensuring a customer knows what he or she must disclose include explaining the duty to disclose all circumstances material to a policy and what needs to be disclosed, and explaining the consequences of any failure to make such a disclosure. Alternatively, rather than an obligation of disclosure, the customer may be asked clear questions about any matter material to the insurer;

- Obligations to be complied with when a contract is concluded and during its lifetime, as well as the consequences of non-compliance;

- Obligation to monitor cover – including a statement, where relevant, that the customer may need to review and update the cover periodically to ensure it remains adequate;

- Right to cancel – including the existence, duration and conditions relating to the right to cancel. If there are any charges related to the early cancellation or switching of a policy, this should be prominently disclosed;

- Right to claim benefits – including conditions under which the policyholder can claim and the contact details to notify a claim;

- Obligations on the customer in the event of a claim; and

- Right to complain – including the arrangements for handling policyholders’ complaints, which may include an insurer’s internal claims dispute mechanism or the existence of an independent dispute resolution mechanism.

19.7.17 Where applicable, the customer may also be provided with information on any policyholder protection scheme or compensation scheme in the case of an insurer not being able to meet its liabilities and any limitations on such a scheme.

19.7.18 If the insurance undertaking is a foreign insurer, the insurer or intermediary should be required to inform the customer, before any commitment is entered into, of details such as:

- the home authority responsible for the supervision of the insurer;

- the jurisdiction in which the head office or, where appropriate, the branch with which the contract is to be concluded is situated; and

- the relevant provisions for making complaints or independent dispute resolution arrangements.

Disclosure specific to internet sales or sales through other digital means

19.7.19 Insurers and intermediaries are increasingly using digital distribution channels to market and sell insurance products, including internet and mobile phone solutions

19.7.20 It may be more difficult for consumers to understand from which location the insurer or intermediary is operating, their identity, and by whom and
where they are licensed. This may especially be the case where more than one insurer or intermediary is involved in the distribution chain.

19.7.21 In conducting insurance business through digital channels, insurers and intermediaries should take into account the specificities of the medium used, and use appropriate tools to ensure that customers receive timely, clear and adequate information that helps their understanding of the terms on which the business is conducted.

19.7.22 The supervisor should require that insurers and intermediaries which offer insurance products through digital means disclose relevant business and contact information (eg on their website), such as:

- the address of the insurer’s head office and the contact details of the supervisor responsible for the supervision of the head office;
- contact details of the insurer, branch or intermediary, and of the supervisor responsible for the supervision of the business, if different from the above;
- the jurisdictions in which the insurer or intermediary is legally permitted to provide insurance;
- procedures for the submission of claims and a description of the claims handling procedures; and
- contact information on the authority or organisation dealing with dispute resolution and/or consumer complaints.

19.7.23 The supervisor should apply to digital insurance activities requirements on transparency and disclosure so as to provide an equivalent level of protection to customers as those applied to insurance business conducted through non-digital means.

19.8 Where customers receive advice before concluding an insurance contract the supervisor requires that the advice provided by insurers and intermediaries takes into account the customer’s disclosed circumstances.

19.8.1 Advice goes beyond the provision of product information and relates specifically to the provision of a personalised recommendation on a product in relation to the disclosed needs of the customer.

19.8.2 The insurer or the intermediary should make it clear to the customer whether advice is provided or not.

19.8.3 Insurers and intermediaries should seek the information from their customers that is appropriate for assessing their insurance demands and needs, before giving advice. This information may differ depending on the type of product and may, for example, include information on the customer’s:

- financial knowledge and experience;
- needs, priorities and circumstances;
- ability to afford the product; and
- risk profile.
19.8.4 The supervisor may wish to specify particular types of policies or customers for which advice is not required to be given. Typically, this may include simple to understand products, products sold to customer groups that have expert knowledge of the type of product or, where relevant, mandated coverage for which there are no options. Even if no advice is given the supervisor may require the insurer or intermediary to take into account the nature of the product and the customer’s disclosed circumstances and demands and needs.

19.8.5 In cases where advice would normally be expected, such as complex or investment-related products, and the customer chooses not to receive advice, it is advisable that the insurer or intermediary retains an acknowledgment by the customer to this effect.

19.8.6 The basis on which a recommendation is made should be explained and documented, particularly in the case of complex products and products with an investment element. All advice should be communicated in a clear and accurate manner, comprehensible to the customer. Where advice is provided, this should be communicated to the customer in written format, on paper or in a durable and accessible medium, and a record kept in a “client file”.

19.8.7 The insurer or intermediary should retain sufficient documentation to demonstrate that the advice provided was appropriate, taking into account the customer’s disclosed circumstances.

19.8.8 In addition, insurers and intermediaries should review the “client files” of those under their responsibility to exercise control after the fact on the quality of the advice given, take any necessary remedial measures with respect to the delivery of advice and, if applicable, be in a position to examine fairly any complaints submitted to it.

19.8.9 There should be a responsibility on the insurer and the intermediary to promote quality advice. In order to ensure the delivery of quality advice, the insurer and intermediary should, in particular, establish continuous training programmes that allow the persons giving advice to:

- keep abreast of market trends, economic conditions, innovations and modifications made to the products and services;
- maintain an appropriate level of knowledge about their industry segment, including the characteristics and risks of the products and services;
- know the applicable legal and regulatory requirements;
- know the requirements for the communication of information regarding the products and services and for appropriate disclosure of any situation liable to compromise the impartiality of the advice given or limit such advice; and
- be familiar with the documentation regarding the products and services and answer reasonably foreseeable questions.

This could include insurers providing training to their sales staff and to intermediaries in respect of specific products.
Policy servicing

19.9 The supervisor requires insurers to:

- service policies appropriately through to the point at which all obligations under the policy have been satisfied;
- disclose to the policyholder information on any contractual changes during the life of the contract; and
- disclose to the policyholder further relevant information depending on the type of insurance product.

19.9.1 For the purposes of this standard, “policyholder” refers only to the party to whom a contract of insurance is issued by an insurer (as opposed to the broader IAIS definition).

19.9.2 Supervisors should require insurers to satisfy obligations under a policy in an appropriate manner and in accordance with the contractually agreed terms and legal provisions. This should include fair treatment in the case of switching between products or early cancellation of a policy. To enable them to do so, insurers should maintain a relationship with the customer throughout the policy lifecycle.

19.9.3 Although ongoing policy servicing is traditionally seen as primarily the responsibility of the insurer, intermediaries are often involved, particularly where there is an ongoing relationship between the customer and the intermediary. The insurer should remain ultimately responsible for servicing policies throughout their life-cycle, and ensuring that intermediaries have appropriate policies and processes in place in respect of the policy servicing activities that they perform on the insurer’s behalf.

19.9.4 Policy servicing includes the provision of relevant information to customers throughout the life of the policy.

Information on the insurer

19.9.5 Information to be disclosed by the insurer to the policyholder includes:

- any change in the name of the insurer, its legal form or the address of its head office and any other offices as appropriate;
- any acquisition by another undertaking resulting in organisational changes as far as the policyholder is concerned; and
- where applicable, information on a portfolio transfer (including policyholders’ rights in this regard).

Information on terms and conditions

19.9.6 Insurers should provide evidence of cover (including policy inclusions and exclusions) promptly after inception of a policy.

19.9.7 Information to be provided on an ongoing basis, including changes in policy terms and conditions or amendments to the legislation applicable to the policy, will vary by type of policy and may cover for example:
• main features of the insurance benefits, in particular details on the nature, scope and due-dates of benefits payable by the insurer;

• the total cost of the policy, expressed appropriately for the type of policy, including all taxes and other cost components; premiums should be stated individually if the insurance relationship comprises several independent insurance contracts or, if the exact cost cannot be provided, information provided on its basis of calculation to enable the policyholder to verify the cost;

• any changes to the cost structure, if applicable, stating the total amount payable and any possible additional taxes, fees and costs not levied via or charged by the insurer, as well as any costs incurred by the policyholder for the use of communication methods if such additional costs are chargeable;

• duration of the contract, terms and conditions for (early) termination of the contract and contractual consequences;

• means of payment of premiums and duration of payments;

• premiums for each benefit, both main benefits and supplementary benefits;

• information to the policyholder about the need to report depreciation/appreciation;

• information to the policyholder about other unique circumstances related to the contract;

• information on the impact of a switch option of an insurance contract;

• information on a renewal of the contract; and

• information on the ongoing suitability of the product, if such a service is provided by the insurer or intermediary.

19.9.8 Additional information provided to the policyholder regarding products with an investment element should at least include:

• participation rights in surplus funds;

• the basis of calculation and state of bonuses;

• the current surrender value;

• premiums paid to date; and

• for unit-linked life insurance, a report from the investment firm (including performance of underlying funds, changes of investments, investment strategy, number and value of the units and movements during the past year, administration fees, taxes, charges and current status of the account of the contract).
19.9.9 Where there are changes in terms and conditions, the insurer should notify the policyholder of their rights and obligations regarding such changes and obtain the policyholder’s consent as appropriate.

19.10 The supervisor requires insurers to handle claims in a timely, fair and transparent manner.

19.10.1 Supervisors should require that insurers have fair and transparent claims handling and claims dispute resolution policies and processes in place.

Claims handling

19.10.2 Insurers should maintain written documentation on their claims handling procedures, which include all steps from the claim being raised to its settlement. Such documentation may include expected timeframes for these steps, which might be extended in exceptional cases.

19.10.3 Claimants should be informed about procedures, formalities and common timeframes for claims settlement.

19.10.4 Claimants should be given information about the status of their claim in a timely and fair manner.

19.10.5 Claim-determinative factors such as deprec iations, discounting or negligence should be illustrated and explained in comprehensive language to claimants. The same applies where claims are denied in whole or in part.

19.10.6 Sometimes intermediaries serve as an initial contact for claimants, which may be in the common interest of the policyholder, intermediary and insurer.

19.10.7 A fair claims assessment process requires avoidance of conflicts of interest, as well as appropriate competence and ongoing training of the staff involved.

19.10.8 Competence requirements for claims assessment differ depending on the type of insurance policy and generally include technical and legal expertise.

Claims disputes

19.10.9 In the course of claims settlement, a dispute may arise between the claimant and the insurer on the claims settlement amount, or coverage. Staff handling claims disputes should be experienced in claims handling and be appropriately qualified.

19.10.10 Dispute resolution procedures should follow a balanced and impartial approach, bearing in mind the legitimate interests of all parties involved. Procedures should avoid being overly complicated, such as having burdensome paperwork requirements. Decisions should include the reasoning in clear language relating closely to the specific disputable issues.

19.10.11 Supervisors may encourage insurers to have mechanisms in place to review claims disputes within the insurer to promote fair play and objectivity in the decisions.

Outsourcing
19.10.12 If any of the claims handling processes are outsourced in part or in full, then supervisors should require insurers to maintain close oversight and ultimate responsibility for the provision of fair and transparent claims handling and claims dispute resolution.

19.11 The supervisor requires insurers and intermediaries to handle complaints in a timely and fair manner.

19.11.1 A complaint can be defined as an expression of dissatisfaction about the service or product provided by an insurer or intermediary. It may involve, but should be differentiated from, a claim and does not include a pure request for information.

19.11.2 Insurers and intermediaries should establish policies and processes to deal in a fair manner with complaints which they receive. These should include keeping a record of each complaint and the measures taken for its resolution.

19.11.3 Insurers and intermediaries should make information on their policies and processes on complaints handling available to customers.

19.11.4 Insurers and intermediaries should respond to complaints without unnecessary delay; complainants should be kept informed about the handling of their complaints.

19.11.5 Insurers and intermediaries should analyse the complaints they receive to identify trends and recurring risks. Analysis of what leads to individual complaints can help them to identify, and enable them to correct, common root causes.

19.11.6 Insurers should analyse complaints that they receive against intermediaries in respect of products that the intermediaries have distributed on their behalf, to enable them to assess the complete customer experience and identify any issues that need to be addressed.

19.11.7 Supervisors may choose to have their own complaints monitoring systems in place in order to benefit from the findings resulting from policyholder complaints.

19.11.8 Some insurers and intermediaries may decide to establish a mechanism to review complaints, in order to ensure respective policies on complaint handling are in place.

Independent dispute resolution mechanisms

19.11.9 It is important that there are simple, affordable, easily accessible and equitable mechanisms in place, independent of insurers and intermediaries, to resolve disputes that have not been resolved by the insurer or intermediary. Such mechanisms, collectively referred to here as Independent Dispute Resolution (IDR) mechanisms, may vary across jurisdictions and may include mediation, an independent review organisation, or an ombudsman. These are out of court mechanisms.

19.11.10 IDR mechanisms often operate on the basis of a code of procedure, or in some cases legislative rules, and may be restricted to retail policyholders. They are sometimes free of charge for such policyholders. Decisions are generally non-binding for the policyholder but may be binding for the insurer or intermediary within certain limits. As consumers
may still avail themselves of court processes if the dispute is not satisfactorily resolved, it is usually agreed that the period of limitation is suspended during an IDR procedure.

19.11.11 Mediators serving IDR mechanisms should meet high standards of professional knowledge, integrity and competence. This would be evidenced, for example, where the mediator is qualified to exercise the functions of a judge and is well grounded in the field of insurance law. Although IDR mechanisms are usually financed by insurers and/or intermediaries, their mediators must be independent from them. Doubts over independence may be expected if the mediator:

- is subject to instructions from insurers/intermediaries;
- is a former employee of an insurer/intermediary; or
- simultaneously performs other functions which could affect their independence.

19.12 The supervisor requires insurers and intermediaries to have policies and processes for the protection and use of information on customers.

19.12.1 Insurers and intermediaries collect, hold, use or communicate to third parties information on their customers in the course of their business. It is important that they have in place policies and processes on the appropriate use and, in the case of personal information, the privacy of such data.

Protecting the privacy of personal information

19.12.2 Significant amounts of the information collected, held or processed represent customers’ financial, medical and other personal information. Security over such information is extremely important, regardless of the format of the information (e.g. whether physical or electronic). Hence safeguarding personal information on customers is one of the key responsibilities of the financial services industry.

19.12.3 Legislation identifies the provisions relating to privacy protection under which insurers and intermediaries are allowed to collect, hold, use or communicate personal information on customers to third parties. Generally, the legislation also identifies who is the competent authority.

19.12.4 Although data protection laws vary from jurisdiction to jurisdiction, insurers and intermediaries should have a clear responsibility to provide their customers with a level of comfort regarding the security of their personal information.

19.12.5 In view of the sensitivity of private information and the risks to consumers and to the insurance sector in the event of failures to protect the privacy of such information, the supervisor should be satisfied that insurers and intermediaries have sufficient safeguards in place to protect the privacy of personal information on customers. To achieve this the supervisor should require insurers and intermediaries to have appropriate policies and processes in place. Such policies and processes should seek to embed the importance of protecting the privacy of personal information within the organisation, as well as provide appropriate management of the risks. Examples of areas that may be covered include:
• ensuring that the Board and Senior Management are aware of the challenges relating to protecting the privacy of personal information on customers;

• demonstrating that privacy protection is part of the organisation’s culture and strategy, through measures such as training to employees that promotes awareness of internal and external requirements on this subject;

• implementing policies, procedures and internal control mechanisms that support the objectives of protecting the privacy of personal information on customers and assess the risks associated with potential failure to protect the privacy of personal information;

• assessing the potential impact of new and emerging risks that could threaten the privacy of personal information, such as the risk of cyber attacks, and taking appropriate steps to mitigate these through measures such as internal controls, technology and training; and

• determining the response measures that may be needed where a failure to protect the privacy of personal information occurs, including matters such as timely notification to affected customers and competent authorities.

In assessing policies and processes to protect the privacy of personal information on customers, depending on the jurisdiction, the supervisor may need to liaise with the relevant competent authority.

Protection against the misuse of customer information

19.12.6 Insurers and intermediaries use personal and other information on customers for a variety of purposes within the course of business that include, amongst other things, product development, marketing, product pricing, and claims management.

19.12.7 The supervisor should not allow insurers and intermediaries to use customer information that they collect and hold in a manner that results in unfair treatment. Insurers and intermediaries should have appropriate policies and processes in place. The measures that the supervisor should expect such policies and processes to cover may include:

• ensuring that the appropriate technology is available and in place to manage adequately the personal and other information an insurer or intermediary is holding on a customer;

• implementing policies and processes relating to the use of data, ensuring that the data collected is not used in an unfair manner including when processed through algorithms or other technologies;

• ensuring that such policies and processes provide that customer data will not be abused to circumvent rules on prohibitions on aggressive marketing practices or discrimination;
ensuring that customers have a right to access and, if needed, to correct data collected and used by insurers and intermediaries; and

• ensuring that group structures are not abused to circumvent prohibitions on the sharing of personal information.

In assessing policies and processes to prevent the use of customer information in a manner that results in unfair treatment, depending on the jurisdiction, the supervisor may need to liaise with the relevant competent authority.

**Outsourcing**

19.12.8 Insurers and intermediaries should be aware of outsourcing risk, especially when the outsourcing agreement is reached with firms in another jurisdiction. Insurers and intermediaries should ensure that the firms to which they outsource processes have adequate policies and processes in place for the protection and use of private information on customers they have in their records.

**Data access in the event of reorganisation**

19.12.9 All the necessary data required in the event of restructuring, resolution and liquidation should, subject to data protection requirements, be accessible and readable at the insurer's or intermediary's domicile at any time. This includes all customer-related data, such as claims and policy data.

**Information supporting fair treatment**

19.13 The supervisor publicly discloses information that supports the fair treatment of customers.

19.13.1 The supervisor should publish the policyholder protection arrangements that are in place for insurance contracts sold within its jurisdiction and insurers subject to its supervision, and confirm the position of policyholders dealing with insurers and intermediaries not subject to oversight or supervision within its jurisdiction.

19.13.2 The supervisor should give information to the public about whether and how local legislation applies to the cross-border offering of insurance, such as through digital channels.

19.13.3 The supervisor should issue warning notices to consumers when necessary in order to avoid transactions with insurers or intermediaries that are unlicensed or subject to a suspended or revoked licence.

19.13.4 The supervisor should publish information that promotes consumers’ understanding of insurance contracts as well as steps that consumers can take to protect themselves and make informed decisions.

19.13.5 The supervisor should have requirements regarding the public disclosure by insurers of information on their business activities, performance and financial position, in order to enhance market discipline, consumer awareness, and understanding of the risks to which insurers are exposed (see ICP 20 Public Disclosure).
ICP 20  Public Disclosure

The supervisor requires insurers to disclose relevant and comprehensive information on a timely basis in order to give policyholders and market participants a clear view of their business activities, risks, performance and financial position.

Introductory Guidance

20.0.1 Public disclosure of material information is expected to enhance market discipline by providing meaningful and useful information to policyholders to make decisions on insuring risks with the insurer, and to market participants (which includes existing and potential investors, lenders and other creditors) to make decisions about providing resources to the insurer.

20.0.2 So far as practicable, information should be presented in accordance with any applicable jurisdictional, international standards or generally accepted practices so as to aid comparisons between insurers.

20.0.3 In setting public disclosure requirements, the supervisor should take into account the information provided in general purpose financial statements and complement it as appropriate. The supervisor should note that insurers which provide public general purpose financial reports may largely comply with jurisdictional disclosure standards that are reflective of this ICP. Where a supervisor publishes on a regular and timely basis information received from insurers, the supervisor may decide that those insurers do not need to publicly disclose that same information.

20.0.4 To the extent that there are differences between the methodologies used in regulatory reporting, general purpose financial reporting and any other items for public disclosure, such differences should be explained and reconciled where possible.

20.0.5 The supervisor’s application of disclosure requirements will depend on the nature, scale and complexity of insurers. For example, it may be overly burdensome for a small, private insurer to meet the same requirements developed for large, publicly traded insurers. While disclosure requirements may vary, the outcome should promote market discipline and provide policyholders and market participants with adequate information for their needs.

20.0.6 Additionally, the supervisor may decide not to apply disclosure requirements if there is no potential threat to the financial system, no public interest need for disclosure, and no legitimately interested party is prevented from receiving information. It is expected that such situations would be exceptional, but could be more relevant for certain types of insurers (for example, captive insurers).

20.0.7 Public disclosure may include a description of how information is prepared, including methods applied and assumptions used. Disclosure of methods and assumptions may assist policyholders and market participants in making comparisons between insurers. Accounting and actuarial policies, practices and procedures differ not only between jurisdictions but also between insurers within the same jurisdiction.
Meaningful comparisons can be made only where there is adequate disclosure of how information is prepared.

20.0.8 Similarly, meaningful comparisons from one reporting period to another can be made only if the reader is informed how the methods and assumptions of preparation have changed and, if practicable, the impact of that change. Changes over time may not be seen as arbitrary if the reasons for changes in methods and assumptions are explained. If an insurer uses methods and assumptions in the preparation of information which are consistent from period to period, and discloses these, it will assist in the understanding of trends over time.

20.0.9 Where changes in methods and assumptions are made, the nature of such changes, the reason for them and their effects, where material, should be disclosed. It may be helpful if information is presented in a manner that facilitates the identification of patterns over time, including providing comparative or corresponding figures from previous periods (e.g., by presenting loss triangulations).

20.0.10 In establishing disclosure requirements for its jurisdiction, the supervisor should consider the need for disclosures that deliver key information rather than unnecessary volumes of data. Excessive disclosure requirements will not lead to effective disclosures for policyholders and market participants and will be burdensome for insurers.

20.0.11 In establishing disclosure requirements, the supervisor should take into account proprietary and confidential information. Proprietary information comprises information on characteristics and details of, for example, insurance products, markets, distribution, and internal models and systems that could negatively influence the competitive position of an insurer if made available to competitors. Information about policyholders and insured parties is usually confidential under privacy legislation or contractual arrangements.

20.0.12 Proprietary and confidential information affects the scope of the required disclosure of information by insurers about their customer base and details on internal arrangements (for example, methodologies used or parameter estimates data). The supervisor should strike an appropriate balance between the need for meaningful disclosure and the protection of proprietary and confidential information.

20.0.13 A consolidated group as determined under applicable accounting standards may differ from a group for the purposes of insurance supervision (see ICP 23 Group-wide Supervision). In circumstances where this is the case, the supervisor may require disclosures based on the scope of the group for supervisory purposes. Where an insurer’s scope of the group is different under applicable accounting standards and solvency standards, it may be appropriate if reasons are provided and an explanation given about the basis on which disclosures have been provided.

20.0.14 Disclosures by insurance legal entities may cross-refer to existing public disclosures to avoid duplication.

20.1 **Subject to their nature, scale and complexity, insurers make audited financial statements available at least annually.**
20.1.1 Where audited financial statements are not required by the supervisor given the nature, scale and complexity of an insurer (for example, for a small local branch office of a foreign insurer), the supervisor may require that similar information is made publicly available by other means.

20.2 Insurers disclose, at least annually and in a way that is publicly accessible, appropriately detailed information on their:

- company profile;
- corporate governance framework;
- technical provisions;
- insurance risk exposure;
- financial instruments and other investments;
- investment risk exposure;
- asset-liability management;
- capital adequacy;
- liquidity risk; and
- financial performance.

20.2.1 In developing disclosure requirements, the supervisor may consider whether such disclosures are:

- easily accessible and up-to-date;
- comprehensive, reliable and meaningful;
- comparable between different insurers operating in the same market;
- consistent over time so as to enable relevant trends to be discerned; and
- aggregated or disaggregated so that useful information is not obscured.

20.2.2 Information should be disseminated in ways best designed to bring it to the attention of policyholders and market participants, but taking into account the relative effectiveness and costs of different methods of dissemination (for example, printed versus digital methods).

20.2.3 Information should be provided with sufficient frequency and timeliness to give a meaningful picture of the insurer to policyholders and market participants. The need for timeliness will need to be balanced against that for reliability.

20.2.4 Disclosure requirements may also have to balance the interests of reliability against those of relevance or usefulness. For example, in some long-tail classes of insurance, realistic projections as to the ultimate cost of incurred claims are highly relevant. However, due to uncertainties, such projections are subject to a high degree of inherent errors of estimation. Qualitative or quantitative information can be used to convey to users an understanding of the relevance and reliability of the information disclosed.
20.2.5 Information should be sufficiently comprehensive to enable policyholders and market participants to form a well-rounded view of an insurer’s financial condition and performance, business activities, and the risks related to those activities. In order to achieve this, information should be:

- well-explained so that it is meaningful;
- complete so that it covers all material circumstances of an insurer and, where relevant, those of the group of which it is a member; and
- both appropriately aggregated so that a proper overall picture of the insurer is presented and sufficiently disaggregated so that the effect of distinct material items may be separately identified.

20.2.6 Information should, so far as practicable, reflect the economic substance of events and transactions as well as their legal form. The information should be neutral (i.e., free from material error or bias) and complete in all material respects.

Company Profile

20.3 Disclosures include information about the insurer’s company profile such as:

- the nature of its business;
- its corporate structure;
- key business segments;
- the external environment in which it operates; and
- its objectives and the strategies for achieving those objectives.

20.3.1 The overall aim for the company profile disclosure is for insurers to provide a contextual framework for the other information required to be made public.

20.3.2 Disclosures on the nature of the insurer’s business and its external environment should assist policyholders and market participants in assessing the strategies adopted by the insurer.

20.3.3 Disclosures may include information about the insurer’s corporate structure, which should include any material changes that have taken place during the year. For insurance groups, where provided, such disclosures should focus on material aspects, both in terms of the legal entities within the corporate structure and the business functions undertaken within the group. In the event of differences in the composition of a group for supervisory purposes and for public reporting purposes, it would be useful if a description of the entities constituting those differences was also provided.

20.3.4 Disclosures may include information on the key business segments, main trends, factors and events that have contributed positively or negatively to the development, performance and position of the company.
20.3.5 Disclosures may include information on the insurer’s competitive position and its business models (such as its approach to dealing and settling claims or to acquiring new business) as well as significant features of regulatory and legal issues affecting its business.

20.3.6 Disclosures may include information about company objectives, strategies and timeframes for achieving those objectives, including the approach to risk appetite, methods used to manage risks, and key resources available. To enable policyholders and market participants to assess these objectives, and the insurer’s ability to achieve them, it may be appropriate if the insurer also explains significant changes in strategy compared to prior years.

20.3.7 Key resources available may include both financial and non-financial resources. For non-financial resources the insurer may, for example, provide information about its human and intellectual capital.

**Corporate Governance Framework**

20.4 The supervisor requires that disclosures about the insurer’s corporate governance framework provide information on the key features of the framework, including its internal controls and risk management, and how they are implemented.

20.4.1 Disclosures should include the manner in which key business activities and control functions are organised, and the mechanism used by the Board to oversee these activities and functions, including for changes to key personnel and management committees. Such disclosures should demonstrate how the key activities and control functions fit into an insurer’s overall risk management framework.

20.4.2 Where a material activity or function of an insurer is outsourced, in part or in whole, disclosures may include the insurer’s outsourcing policy and how it maintains oversight of, and accountability for, the outsourced activity or function.

**Technical Provisions**

20.5 The supervisor requires that disclosures about the insurer’s technical provisions are presented by material insurance business segment and include, where relevant, information on:

- the future cash flow assumptions;
- the rationale for the choice of discount rates;
- the risk adjustment methodology where used; and
- other information as appropriate to provide a description of the method used.

20.5.1 Disclosures related to technical provisions should provide information on how those technical provisions are determined. As such, disclosures may include information about the level of aggregation used and the amount, timing and uncertainty of future cash flows in respect of insurance obligations.

20.5.2 Disclosures should include a presentation of technical provisions and reinsurance assets on a gross basis. However, it may be useful to have
information about technical provisions presented on both a net and gross basis.

20.5.3 Information may be disclosed about the method used to derive the assumptions for calculating technical provisions, including the discount rate used. Disclosures may also include information about significant changes in assumptions and the rationale for the changes.

20.5.4 When applicable, information about the current estimate and margin over the current estimate may include the methods used to calculate them, whether or not these components of technical provisions are determined separately. If the methodology has changed since the last reporting period, it would be useful to include the reasons for the change and any material quantitative impact.

20.5.5 It may be useful if the insurer provides an outline of any model(s) used and describe how any range of scenarios regarding future experience has been derived.

20.5.6 Disclosures may include a description of any method used to treat acquisition costs and whether future profits on existing business have been recognised.

20.5.7 Where surrender values are material, disclosures may include the insurer’s surrender values payable.

20.5.8 Disclosure of a reconciliation of technical provisions from the end of the previous year to the end of the current year may be particularly useful.

20.5.9 Disclosure of technical provisions may be presented in two parts:

    • one part that covers claims from insurance events which have already taken place at the date of reporting (claims provisions including incurred but not reported (IBNR) and incurred but not enough reported (IBNER) provisions) and for which there is an actual or potential liability; and
    • another part that covers losses from insurance events which will take place in the future (for example, the sum of provision for unearned premiums and provision for unexpired risks (also termed premium deficiency reserve)).

20.5.10 Providing this disclosure in two parts is particularly important for lines of insurance business where claims may take many years to settle.

Life insurers

20.5.11 It may be useful if the disclosures include key information on the assumed rates, the method of deriving future mortality and disability rates, and whether customised tables are applied. Disclosures may include a life insurer’s significant assumptions about future changes of mortality and disability rates.

20.5.12 It may enhance policyholder and market participant understanding if disclosures include information on the conditions for the amount and timing of the allocation of participation features and how such features are valued in technical provisions. Required disclosures could include whether participation features are based on: the performance of a group of contracts; the realised/unrealised investment returns from a pool of
assets; the profit or loss of the company; or any other element. Disclosures could also be required on the extent to which such features are contractual and/or discretionary.

20.5.13 Disclosures may include quantitative information on the life insurer’s minimum participation features and actual distributions to policyholders. For example, the following quantitative information may be shown by segment:

- guaranteed policyholder benefits paid; and
- additional policyholder benefits paid which arise from profit sharing clauses.

20.5.14 Disclosures may include the assumptions and methodologies employed to value significant guarantees and options, including the assumptions concerning policyholder behaviour.

Non-life insurers

20.5.15 In order to enable policyholders and market participants to evaluate trends, disclosures for non-life insurers may include historical data about earned premiums compared to technical provisions by class of business. To assess the appropriateness of assumptions and methodology used for determining technical provisions, historical data on the run off result and claims development could be disclosed.

20.5.16 To facilitate the evaluation of a non-life insurer’s ability to assess the size of the commitments to indemnify losses covered by the insurance contracts issued, disclosures for non-life insurers may include the run off results over many years, to enable policyholders and market participants to evaluate long-term patterns (for example, how well the insurer estimates the technical provisions). The length of the time period should reflect how long-tailed the distribution of losses is for the insurance classes in question.

20.5.17 Non-life insurers may disclose information on the run off results for incurred losses and for the provisions for future losses.

20.5.18 Disclosures for non-life insurers may include the run off results as a ratio of the initial provisions for the losses in question. When discounting is used, disclosures should include the effect of discounting.

20.5.19 Except for short-tail business, the supervisor may require non-life insurers to disclose information on the development of claims in a claims development triangle. A claims development triangle shows the insurer’s estimate of the cost of claims (claims provisions and claims paid), as of the end of each year, and how this estimate develops over time. This information should be reported consistently on an accident year or underwriting year basis and reconciled to amounts reported in the balance sheet.

Insurance Risk Exposures

20.6 The supervisor requires that disclosures about the insurer’s reasonably foreseeable and material insurance risk exposures, and their management, include information on:
• the nature, scale and complexity of risks arising from its insurance contracts;
• the insurer’s risk management objectives and policies;
• models and techniques for managing insurance risks (including underwriting processes);
• its use of reinsurance or other forms of risk transfer; and
• its insurance risk concentrations.

20.6.1 Disclosures may include a quantitative analysis of the insurer’s sensitivity to changes in key factors both on a gross basis and taking into account the effect of reinsurance, derivatives and other forms of risk mitigation on that sensitivity. For example, disclosures may include a sensitivity analysis by life insurers to the changes in mortality and disability assumptions or sensitivities to increased claim inflation by non-life insurers.

20.6.2 Where an insurance group includes legal entities in other sectors, disclosures may include the risk exposure of the insurance legal entities from those other entities and procedures in place to mitigate those risks.

20.6.3 Disclosures may include a description of the insurer’s risk appetite and its policies for identifying, measuring, monitoring and controlling insurance risks, including information on the models and techniques used.

20.6.4 Disclosures may include information on the insurer’s use of derivatives to hedge risks arising from insurance contracts. This information may include a summary of internal policies on the use of derivatives.

20.6.5 Disclosure of how an insurer uses reinsurance and other forms of risk transfer may enable policyholders and market participants to understand how the insurer controls its exposure to insurance risks.

20.6.6 Quantitative data on an insurer’s reinsurance disclosure may include the insurer’s overall reinsurance programme to explain the net risk retained and the types of reinsurance arrangements made (treaty, facultative, proportional or non-proportional) as well as any risk mitigating devices that reduce the risks arising out of the reinsurance cover.

20.6.7 It may be beneficial if disclosures separately detail the reinsurers’ share of technical provisions and receivables from reinsurers on settled claims. Further quantitative disclosures on reinsurance may include:

• the credit quality of the reinsurers (for example, by grouping reinsurance assets by credit rating);
• credit risk concentration of reinsurance assets;
• the nature and amount of collateral held against reinsurance assets;
• the development of reinsurance assets over time; and
• the ageing of receivables from reinsurers on settled claims.
20.6.8 It may be useful if disclosures include the impact and planned action when the expected level or scope of cover from a reinsurance/risk transfer contract is not obtained.

20.6.9 Description of the insurer’s risk concentrations may include, at least, information on the geographical concentration of insurance risk, the economic sector concentration of insurance risk, the extent to which the risk is reduced by reinsurance and other risk mitigating elements and, if material, the risk concentration inherent in the reinsurance cover.

20.6.10 Disclosures may include the geographical concentration of premiums. The geographical concentration may be based on where the insured risk is located, rather than where the business is written.

20.6.11 If material, disclosures may include the number of reinsurers that it engages, as well as the highest concentration ratios. For example, it would be appropriate to expect an insurer to disclose its highest premium concentration ratios, which shows the premiums ceded to an insurer’s largest reinsurers in aggregate, as a ratio of the total reinsurance premium ceded.

Financial Instruments and Other Investments

20.7 The supervisor requires that disclosures about the insurer’s financial instruments and other investments include information on:

- instruments and investments by class;
- investment management objectives, policies and processes; and
- values, assumptions and methods used for general purpose financial reporting and solvency purposes, as well as an explanation of any differences, where applicable.

20.7.1 For the purposes of disclosure, an insurer may group assets and liabilities with similar characteristics and/or risks into classes and then disclose information segregated by those classes.

20.7.2 Where investment management objectives, policies and processes differ between segments of an insurer’s investment portfolio, disclosures should be sufficient to provide an understanding of those differences.

20.7.3 When providing disclosures around the uncertainty of reported values of financial instruments and other investments, it may be useful if the effect of derivatives on that uncertainty is also disclosed.

Investment Risk Exposures

20.8 The supervisor requires disclosures about the insurer’s material investment risk exposures, and their management.

20.8.1 Disclosures may include quantitative information, about its exposure to:

- currency risk;
- market risk;
- credit risk; and
- concentration risk.
20.8.2 The risks listed above may affect both assets and liabilities. For example, market risk arising from interest rate movement may be reflected in changes in the valuation of an insurer’s fixed income investments as well as changes in the valuation of insurance liabilities if they are discounted using market interest rates. Changes in interest rates may also change the amounts that an insurer has to pay for its variable rate borrowings. Therefore, required disclosure may include the risk exposure arising from both an insurer’s assets and its liabilities.

20.8.3 Disclosures may include the investment return achieved together with the risk exposure and investment objective. Disclosure of risk exposures can provide policyholders and market participants with valuable insight into both the level of variability in performance that one can expect when economic or market conditions change, and the ability of an insurer to achieve its desired investment outcome.

20.8.4 For investment risk exposures, disclosures may include the intra-period high, median and low exposures where there have been significant changes in exposure since the last reporting date. Disclosures may also include the amount bought and sold during a reporting period as a proxy for turnover. Such disclosure of risk exposures may also be required for each asset class.

20.8.5 In jurisdictions that require investment disclosures to be grouped by risk exposure, the disclosures should provide information about the risk management techniques used to measure the economic effect of risk exposure. Such disclosure may include an analysis by type of asset class.

20.8.6 Disclosures may include information on its use of derivatives to hedge investment risks, including a summary of internal policies on the use of derivatives.

20.8.7 Disclosures may include information on whether or not the insurer carries out stress tests or sensitivity analysis on its investment risk exposures (for example, the change in capital resources as a percentage of total assets corresponding to a 100 basis point change in interest rates), and, if so, disclose the model, process and types of assumptions used and the manner in which the results are used as part of its investment risk management practices.

20.8.8 For debt securities, disclosures on the sensitivity of values to market variables including credit spreads may include breakdowns by credit rating of issue, type of issuer (e.g., government, corporate) and by period to maturity.

20.8.9 In addition to breakdowns on ratings and types of credit issuers, the insurer should disclose the aggregate credit risk arising from off-balance sheet exposures.

**Asset-Liability Management**

20.9 Disclosures about the insurer’s asset-liability management (ALM) include information on:

- ALM in total and, where appropriate, at a segmented level;
• the methodology used and the key assumptions employed in measuring assets and liabilities for ALM purposes; and
• any capital and/or provisions held as a consequence of a mismatch between assets and liabilities.

20.9.1 To provide information on its ALM approach, disclosures may include qualitative information explaining how the insurer manages assets and liabilities in a co-ordinated manner. The explanation could take into account the ability to realise its investments quickly, if necessary, without substantial loss, and sensitivities to fluctuations in key market variables (including interest rate, exchange rate, and equity price indices) and credit risks.

20.9.2 Where an insurer’s ALM is segmented (e.g. by different lines of business), disclosures may include information on ALM at a segmented level.

20.9.3 Where derivatives are used, it may be useful if the disclosures include a description of both the nature and effect of their use.

20.9.4 Disclosures may include the insurer’s sensitivity of regulatory capital resources and provisions for mismatching to:
  • changes in the value of assets; and
  • changes in the discount rate or rates used to calculate the value of the liabilities.

Capital Adequacy

20.10 Disclosures about the insurer’s capital adequacy include information on:
  • its objectives, policies and processes for managing capital and assessing capital adequacy;
  • the solvency requirements of the jurisdiction(s) in which the insurer operates; and
  • the capital available to cover regulatory capital requirements. If the insurer uses an internal model to determine capital resources and requirements, information about the model is disclosed.

20.10.1 Information about objectives, policies and processes for managing capital adequacy assist in promoting the understanding of risks and measures which influence the capital calculation and the risk appetite that is applied.

20.10.2 It may be useful if the insurer discloses information to allow market participants to assess the quantity and quality of its capital in relation to regulatory capital requirements.

20.10.3 Disclosures may include qualitative information about its management of capital regarding:
  • instruments regarded as available capital;
  • key risks and measures which influence the capital calculation; and
  • the insurer’s risk appetite.
20.10.4 It may be useful if the disclosures include a description of any variation in the group as defined for capital adequacy purposes from the composition of the group used for general purpose financial reporting purposes.

**Liquidity Risk**

20.11 The supervisor requires that disclosures about the insurer’s liquidity risk include sufficient quantitative and qualitative information to allow a meaningful assessment by market participants of the insurer’s material liquidity risk exposures.

20.11.1 Disclosures on liquidity risk should include:

- quantitative information on the insurer’s sources and uses of liquidity, considering liquidity characteristics of both assets and liabilities; and
- qualitative information on the insurer’s liquidity risk exposures, management strategies, policies and processes.

20.11.2 Disclosures should discuss known trends, significant commitments and significant demands. Disclosures should also discuss reasonably foreseeable events that could result in the insurer's liquidity position improving or deteriorating in a material way.

**Financial Performance**

20.12 Disclosures about the insurer’s financial performance, in total and at a segmented level include information on:

- earnings analysis;
- claims statistics including claims development;
- pricing adequacy; and
- investment performance.

**General financial performance**

20.12.1 Disclosures should help policyholders and market participants better understand how profit emerges over time from new and in-force insurance contracts.

20.12.2 Disclosure may include a statement of changes in equity showing gains and losses recognised directly in equity as well as capital transactions with, and distributions to, shareholders, and profit sharing with policyholders.

20.12.3 Disclosures may include information on its operating segments and how they were determined.

20.12.4 An operating segment is a component of an entity that engages in business activities from which it may earn revenues and incur expenses and whose operating results are regularly reviewed by the entity’s management to make decisions about resources to be allocated. Examples of features by which business is segmented are:

- type of business: life insurance, non-life insurance, investment management; and
• mix of organisational and geographic approach: eg insurance jurisdiction X, insurance jurisdiction Y, insurance (other), asset management jurisdiction Z.

20.12.5 Disclosures may include the impact of amortisation and impairment of intangible assets on financial performance.

Technical performance

20.12.6 The insurer may provide statements of profit and loss that include the results, both gross and net of reinsurance, of their underwriting by broad lines of business.

20.12.7 If the insurer is a ceding insurer, disclosures may include gains and losses recognised in profit or loss on buying reinsurance.

Technical performance for non-life insurers

20.12.8 In order to judge how well insurance premiums cover the underlying risk of the insurance contracts and the administration expenses (pricing adequacy), disclosures may include data on:

• loss ratio;
• expense ratio;
• combined ratio; and
• operating ratio.

20.12.9 These ratios should be calculated from the profit and loss account of the reporting year and be gross of reinsurance in order to neutralise the effect of mitigation tools on the technical performance of the direct business. Gains on reinsurance cannot be expected to continue indefinitely without price adjustments from reinsurers. If the net ratios are materially different from the gross ratios, then both ratios should be disclosed. The ratios should be measured either on an accident year or an underwriting year basis.

20.12.10 When discounting is used, disclosures may include information on the discount rates used and method of discounting to be disclosed. The discount rates should be disclosed at an appropriate level of aggregation by duration, for example, for each of the next five years and the average rate for claims expected to be paid after five years.

20.12.11 Such disclosure should be accompanied by supporting narrative, covering an appropriate period, to enable policyholders and market participants to evaluate long-term trends better. Information relating to previous years should not be recalculated to take into account present information. The length of the period may reflect the historical volatility of the particular class of insurance business.

20.12.12 It may be appropriate in the case of high volume, homogeneous classes, for the supervisor to require insurers to disclose statistical information on claims. For instance, the insurer could describe the trend in the number of claims and the average size of claims. To be relevant, this information should be linked to the level of business (eg number of policies or earned premiums).
20.12.13 In principle, the trend in claims may reflect the development in insurance risks. As it is difficult to point to one good measurement method of insurance risk, several can be considered. However, it would be normal for non-life insurers to be required to disclose historical data accompanied by supporting narrative at least on:

- the mean cost of claims incurred (ie, the ratio of the total cost of claims incurred to the number of claims) in the accounting period by class of business; and
- claims frequency (for example, the ratio of the number of claims incurred in the reporting period to the average number of insurance contracts in existence during the period).

**Source of earnings analysis for life insurers**

20.12.14 Where an applicable jurisdictional standard does not require a similar analysis to be disclosed, it may be useful for disclosures to include expected earnings on in-force business. This represents the earnings on the in-force business that were expected to be realised during the reporting period. Examples of this include expected release of risk margins, net management fees, and earnings on deposits.

20.12.15 Life insurers may disclose the impact of new business. This represents the point-of-sale impact on net income of writing new business during the reporting period. This is the difference between the premium received and the sum of the expenses incurred as a result of the sale and the new technical provisions established at the point of sale. This is also affected by any methodology used to defer and amortise acquisition expenses.

20.12.16 It may be useful for life insurers to disclose experience gains and losses. This represents gains and losses that are due to differences between the actual experience during the reporting period and the technical provisions at the start of the year, based on the assumptions at that date.

20.12.17 Life insurers may disclose the impact on earnings of management actions and changes in assumptions.

20.12.18 An example of a Source of Earnings analysis table for a life insurer is provided below.

<table>
<thead>
<tr>
<th>Expected earnings on in-force business</th>
<th>Impact of new business</th>
<th>Experienced gains and losses:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Segment A</strong></td>
<td><strong>Segment B</strong></td>
<td><strong>Total</strong></td>
</tr>
<tr>
<td>Current Year</td>
<td>Previous Year</td>
<td>Current Year</td>
</tr>
<tr>
<td><strong>Example: Source of Earnings</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Table</strong></td>
<td><strong>Table</strong></td>
<td><strong>Table</strong></td>
</tr>
</tbody>
</table>
Investment performance is one of the key determinants of an insurer’s profitability. For many life insurance policies, returns that policyholders receive are either directly or indirectly influenced by the performance of an insurer’s investments. Disclosure of investment performance is, therefore, essential to policyholders and market participants.

Disclosure of investment performance may be made on appropriate subsets of an insurer’s assets (for example, assets belonging to the insurer’s life insurance business, assets belonging to statutory or notionally segregated portfolios, assets backing a group of investment-linked contracts, assets grouped as the same asset class).

For investment performance related to equity securities, debt securities, properties and loans, the disclosures may include a breakdown of income (e.g., dividend receipts, interest income, rental income), realised gains/losses, unrealised gains/losses, impairments including changes in loan loss provisions and investment expenses.

Non-GAAP Financial Measures

Insurers that publicly disclose non-GAAP financial measures are required to adhere to the specified practices regarding those measures, where applicable.

In many jurisdictions, publicly-listed insurers are expected to adhere to specific practices, for disclosure of non-GAAP financial measures, which have been promulgated by the domestic securities supervisor. The supervisor could consider standards promulgated by the domestic securities supervisor appropriate.

If no such requirements exist from the domestic securities supervisor for non-GAAP financial measures, the supervisor may promulgate requirements for insurers based on considerations of best practices and existing international guidance from key standard setting bodies dealing with financial disclosures.
Countering Fraud in Insurance

The supervisor requires that insurers and intermediaries take effective measures to deter, prevent, detect, report and remedy fraud in insurance.

Introductory Guidance

21.0.1 Fraud in insurance (including reinsurance) is a deceptive act or omission intended to gain advantage for a party committing the fraud (the fraudster) or for other parties. Most jurisdictions have legal provisions against fraud in insurance. In many jurisdictions, instances of fraud are criminal acts.

21.0.2 Fraud in insurance can take many forms and be perpetrated by any party involved in insurance, including insurers, insurers’ managers and staff, intermediaries, accountants, auditors, consultants, claims adjusters, third party claimants and policyholders.

21.0.3 Fraud poses a serious risk to all financial sectors; fraud in insurance results in reputational as well as financial damage and social and economic costs. In the insurance sector, both insurers and policyholders bear the costs. Losses caused by fraudulent activities affect insurers’ profits and potentially their financial soundness. To compensate, insurers raise premiums and this results in higher costs for policyholders. Fraud may also result in the policyholder discovering that they are not insured for risks they believed were covered, which can have a material impact on both customers and businesses. For these reasons, fraud may reduce consumer and shareholder confidence. It can affect the reputation of individual insurers, insurance groups, the insurance sector and, potentially, economic stability more broadly.

21.0.4 Countering fraud is in principle the concern of the individual insurers and intermediaries. Insurers and intermediaries need to understand and take steps to minimise their vulnerability to fraud.

21.0.5 Responsibility for ensuring that insurers and intermediaries have adequate fraud risk management ultimately lies with the Board and Senior Management of the insurer or intermediary.

21.0.6 The supervisor is one of the competent authorities that has an important role to play in countering fraud in insurance in its jurisdiction. There may be jurisdictions where several authorities have a responsibility for deterring, preventing, detecting, reporting and remedying fraud in insurance.

21.0.7 Fraud in insurance is an issue for supervisors if the risk of fraud is not addressed adequately. Therefore, supervisors should pay appropriate attention as to whether insurers and intermediaries have adequate and effective policies, procedures and controls in place to deter, prevent, detect, report and remedy fraud (see Application Paper on Deterring, Preventing, Detecting, Reporting and Remediying Fraud in Insurance).

21.0.8 The increasing integration of financial markets and the growing number of internationally active insurers and intermediaries make fraud and its potential global implications an important issue to address at the
international level. Therefore, it is important that supervisors communicate with one another in addressing fraud across jurisdictions.

21.0.9 The supervisor should consider the application of these standards, particularly for intermediaries, taking into account that there are various business models ranging from sole traders to large enterprises.

21.1 **Fraud in insurance is addressed by legislation which prescribes adequate sanctions for committing such fraud and for prejudicing an investigation into fraud.**

21.1.1 Legislation should contain offences and sanctions for committing fraud and for prejudicing an investigation into fraud. It should also provide the ability:

- to obtain documents and information, together with statements made by relevant individuals, for intelligence and investigation purposes, for disclosure to appropriate authorities;
- to restrain assets which represent, or are believed to represent, the proceeds of fraud; and
- to confiscate assets which are, or are believed to be, the proceeds of fraud.

21.1.2 It may be helpful for anti-fraud legislation to provide appropriate civil and criminal immunity for fraud reporting in good faith, including where no fraud was subsequently found to have occurred.

21.2 **The supervisor has a thorough and comprehensive understanding of the types of fraud risk to which insurers and intermediaries are exposed. The supervisor regularly assesses the potential fraud risks to the insurance sector and requires insurers and intermediaries to take effective measures to address those risks.**

21.2.1 The supervisor should identify the main vulnerabilities in its jurisdiction, taking into account independent risk assessments where relevant, and address them accordingly. These are not static assessments. They will change over time, depending on how circumstances develop, and how threats evolve.

21.2.2 The supervisor should have a thorough and comprehensive understanding of:

- the activities undertaken and products and services offered by insurers and intermediaries; and
- internal, policyholder, claims and intermediary fraud.

21.2.3 The supervisor should consider the potential fraud risks alongside other risk assessments (including governance and market conduct) arising from its wider duties and be aware of the relevance of fraud to the duties it carries out in respect of other ICPs and standards.

21.3 **The supervisor has an effective supervisory framework to monitor and enforce compliance by insurers and intermediaries with the requirements to counter fraud in insurance.**
21.3.1 The supervisor should issue anti-fraud requirements by way of regulations, instructions or other documents or mechanisms that set out enforceable requirements with sanctions for non-compliance with the requirements.

21.3.2 The supervisor should issue guidance to insurers and intermediaries that will assist them to counter fraud effectively and to meet the requirements set by the supervisor.

21.3.3 The supervisor should have sufficient financial, human and technical resources to counter fraud, including the resources needed to be able to issue and enforce sanctions in relation to complex cases where insurers or intermediaries oppose such sanctions.

21.3.4 The staff of the supervisor engaging in anti-fraud activity should be appropriately skilled and provided with adequate and relevant training on countering fraud. Examples of issues to be covered under adequate and relevant training for the staff of the supervisor include fraud legislation (including offences), fraud typologies, techniques to be used by supervisors to ensure that insurers and intermediaries are complying with their obligations, and the issue and enforcement of sanctions. Similarly, insurers and intermediaries should provide relevant training on anti-fraud measures to Board Members, Senior Management and other staff as appropriate.

21.3.5 The supervisor should take account of the risk of fraud at each stage of the supervisory process, where relevant, including the licensing stage.

21.3.6 The supervisor should assess whether insurers and intermediaries have adequate fraud risk management systems in place which are reviewed regularly. Insurers and intermediaries should be able to demonstrate to the supervisor that they have effective management of their fraud risk and possible risks to their solvency or continuity caused by fraud. The supervisor should at least assess whether insurers and intermediaries:

- have effective policies, procedures and controls in place to deter, prevent, detect, report and remedy fraud;
- have an independent internal audit function and periodically carry out fraud-sensitive audits; and
- have allocated appropriate resources to deter, prevent, detect, record and, as required, promptly report fraud to the relevant authorities.

21.3.7 The supervisor should use both off-site monitoring and on-site inspections to:

- evaluate the effectiveness of the internal control system of insurers and intermediaries to manage fraud risks; and
- recommend or require appropriate remedial action where the internal control system is weak and monitor the implementation of such remedial actions.

21.3.8 As particular fraud risks arise from claims, the supervisor should cover claims management processes in its supervision. This may include reviewing and assessing claims data, the quality of client acceptances,
and claims handling processes. Regarding the risks of fraud occurring in the underwriting process, the supervisor should review relevant processes and controls, in particular those concerned with verification of customer information.

21.3.9 The supervisor should have the power to take appropriate corrective and remedial action where insurers and intermediaries do not implement anti-fraud requirements effectively or in cases of fraud committed by the insurer or intermediary. Depending on the severity of the situation and level of supervisory powers, this could include letters to management, directions, fines, the suspension of business, the appointment of alternative management and redress to customers.

21.3.10 Where a supervisor identifies suspected criminal activities in an insurer or intermediary it should ensure that relevant information is provided to the financial intelligence unit (FIU) and appropriate law enforcement agency and any other relevant supervisors.

21.4 The supervisor regularly reviews the effectiveness of the measures insurers and intermediaries and the supervisor itself are taking to deter, prevent, detect, report and remedy fraud. The supervisor takes any necessary action to improve effectiveness.

21.4.1 The review of effectiveness should take risk into account and assess whether established regulations and supervisory practices are being enforced.

21.4.2 This review could cover aspects such as:

- the risks of fraud in the insurance sector and whether these are adequately addressed by the risk-based approach of the supervisor;
- the adequacy of the supervisor’s resources and training;
- whether the number and content of on-site inspections relating to anti-fraud measures are adequate;
- whether off-site supervision of anti-fraud measures is adequate;
- the findings of on-site inspections, including the effectiveness of training and implementation by insurers and intermediaries of anti-fraud measures;
- action taken by the supervisor against insurers and intermediaries;
- input from other authorities with anti-fraud responsibilities, such as information on fraud prosecutions and convictions;
- the number and nature of requests for information from other authorities concerning anti-fraud matters; and
- the adequacy of the requirements, guidance and other information provided by the supervisor to the sector which may vary on the basis of the business undertaken.
Such reviews should enable the supervisor to identify any necessary actions which need to be taken to improve effectiveness.

21.4.3 The supervisor should consider contributing to or promoting anti-fraud initiatives such as:

- working with relevant industry and trade associations to encourage and maintain an industry-wide approach to deterring, preventing, detecting, reporting and remediying fraud;

- the establishment of anti-fraud committees consisting of industry or trade organisations, law enforcement agencies, other supervisors, other authorities and possibly consumer organisations as a platform to address fraud in insurance – for example, by discussing trends, risks, policy issues, profiles and modus operandi;

- the establishment of a fraud database on suspected and/or confirmed fraud attempts; insurers could be requested or required to submit information and statistics with respect to these attempts;

- the exchange of information between insurers and intermediaries on fraud and fraudsters including, as appropriate, through the use of databases to the extent permitted by local legislation;

- the enhancement of consumer/policyholder awareness on insurance fraud and its effects through effective education and media campaigns; and

- cooperation between organisations involved with combating fraud in the insurance sector, such as organisations for accountants, forensic auditors and claims adjustors.

21.4.4 Whenever a supervisor is informed of substantiated suspicious fraudulent activities which may affect insurers, intermediaries or the insurance industry as a whole, it should consider whether to convey warning information to insurers and intermediaries to the extent permitted by local legislation.

21.4.5 The supervisor should maintain records on the number of on-site inspections relating to the combating of fraud measures and on sanctions it has issued to insurers and intermediaries with regard to inadequate anti-fraud measures.

21.5 The supervisor has effective mechanisms in place, which enable it to cooperate, coordinate and exchange information with other competent authorities, such as law enforcement authorities, as well as other supervisors concerning the development and implementation of policies and activities to deter, prevent, detect, report and remedy fraud in insurance.

21.5.1 Mechanisms of cooperation and coordination should normally address:
• operational cooperation and, where appropriate, coordination between supervisors and other anti-fraud competent authorities; and
• policy cooperation and, where appropriate, coordination across all relevant anti-fraud competent authorities.

21.5.2 Where the supervisor identifies suspected fraud in insurers or intermediaries it should ensure that relevant information is provided to the FIU and appropriate law enforcement agency and any other relevant supervisors.

21.5.3 The supervisor should take all necessary steps to cooperate and exchange information with other relevant authorities. There should be contact by the supervisor with the FIU and appropriate law enforcement agency to ascertain any concerns it has and any concerns expressed by insurers and intermediaries and to obtain feedback on trends in reported cases.

21.5.4 The supervisor should consider appointing within its office a contact for anti-fraud issues and for liaising with other competent authorities to promote an efficient exchange of information.

21.5.5 The supervisor should maintain records on the number and nature of formal requests for assistance made by or received from supervisors or law enforcement agencies concerning fraud or potential fraud, including whether the request was granted or refused.
The supervisor requires insurers and intermediaries to take effective measures to combat money laundering and terrorist financing. The supervisor takes effective measures to combat money laundering and terrorist financing.

**Introductory Guidance**

22.0.1 The insurance sector is potentially at risk of being misused for money laundering and terrorist financing. This exposes the insurance sector to legal, operational and reputational risks.

22.0.2 Money laundering (ML) is the processing of criminal proceeds to disguise their illegal origin. When criminal activity generates substantial profits, the individual or group involved must find a way to control and “legitimize” funds without attracting attention to the underlying activity or the persons involved. Criminals do this by disguising the sources, changing the form, or moving the funds to a place where they are less likely to attract attention, and therefore may use the financial sector, including the insurance sector, to do so. Examples of criminal activity which may generate large profits and lead to money laundering include embezzlement, tax evasion, insider trading, bribery, cyber-crimes, illegal arms sales, smuggling, drug trafficking, prostitution, human trafficking, as well as corruption and organised crime.

22.0.3 Terrorist financing (TF) is the financing of terrorist acts, and of terrorists and terrorist organisations. It refers to the wilful provision or collection of funds by any means, directly or indirectly, with the unlawful intention that they should be used, or in the knowledge that they are to be used, in full or in part to carry out a terrorist act by a terrorist organisation or by an individual terrorist, or to support terrorists or terrorist organisations. Terrorist financing offenses may constitute predicate offenses for the crime of money laundering, in accordance with applicable law.

22.0.4 The Financial Action Task Force (FATF) is an inter-governmental body, established to set international standards for anti-money laundering (AML) and combating the financing of terrorism (CFT). The FATF standards are comprised of its individual recommendations together with interpretive notes and the applicable definitions in the FATF glossary. In this ICP the term FATF Recommendations encompasses all of these components of the FATF standards. The FATF Recommendations are directed at jurisdictions and supervisors should therefore reference their own national risk assessment, applicable laws and regulations with respect to AML/CFT.

22.0.5 The IAIS is a FATF Observer Organisation and, accordingly, endorses the FATF Recommendations. This ICP is intended to be consistent with the FATF Recommendations; however, compliance with the FATF Recommendations does not necessarily imply observance of ICP 22 nor does observance of ICP 22 necessarily imply compliance with the FATF Recommendations.
22.0.6 According to the FATF:

- the ML/TF risks associated with the insurance sector are generally lower than those associated with other financial products (such as loans or payment services) or other sectors (such as banking); and
- many life insurance products are not sufficiently flexible to be the first vehicle of choice for money launderers.

However, as with other financial products, there is a risk that the funds used to purchase life insurance may be the proceeds of crime.

22.0.7 This ICP applies to the underwriting and placement of life insurance and other investment-related insurance. Depending upon the jurisdiction's assessment of the ML/TF risk posed by the non-life sector, the jurisdiction should consider whether and to what extent to apply this ICP to that sector as well.

22.0.8 The FATF Recommendations require jurisdictions to designate a “competent authority” or authorities to have responsibility for ensuring that financial institutions (including insurers and intermediaries) adequately comply with the jurisdiction's approach to implementing the FATF Recommendations to combat ML/TF. The AML/CFT competent authority is often designated by a jurisdiction's legislation. There may be jurisdictions where several authorities have AML/CFT responsibilities for the insurance sector. Competent authorities may include supervisors, law enforcement agencies and a financial intelligence unit (FIU) which serves as a jurisdictional centre for receiving and analysing information (such as suspicious transaction reports) and disseminating information regarding potential ML/TF.

22.0.9 In some jurisdictions, the supervisor may not be designated as an AML/CFT competent authority, but nevertheless all supervisors must understand the risk of ML/TF to the insurance sector and take steps to help combat such risk.

22.0.10 The standards and guidance related to ICP 22 are divided into two parts. Part A applies where the supervisor is a designated AML/CFT competent authority, or acts on behalf of such designated competent authority. Part B applies where the supervisor is not a designated AML/CFT competent authority. To demonstrate observance of this ICP the supervisor must meet the requirements of the standards in either Part A or Part B, or both, according to the circumstances of its jurisdiction.

22.0.11 In implementing this ICP, the supervisor may consider as relevant various guidance available from the FATF, including its “Guidance for a Risk-Based Approach for the Life Insurance Sector” (FATF Guidance). The FATF Guidance, which is non-binding, aims to support the design and implementation of a Risk-Based Approach (RBA) to AML/CFT for the life insurance sector, taking into account applicable ML/TF risk assessments and legal and regulatory frameworks to combat money laundering and terrorist financing. The RBA concept is related to, but distinct from, the overarching concept of risk-based supervision that applies to all ICPs.
22.0.12 As described in the ICP Introduction, this ICP applies to the supervision of insurance legal entities and, unless otherwise specified, to insurance groups. The supervisor may also consider FATF Guidance concerning supervision and mitigation of ML/TF risks at the group-wide level.

22.0.13 Certain FATF Recommendations require that supervision be applied to the implementation of targeted financial sanctions (TFS) related to terrorism, terrorist financing and financing of proliferation of weapons of mass destruction. Adherence to TFS is not subject to the RBA described in this ICP and TFS is not further addressed in this ICP. Whether insurance supervisors have responsibilities for TFS will depend upon the particular jurisdictional arrangements in place.

Part A: Where the supervisor is a designated AML/CFT competent authority

22.1 The supervisor:

- has a thorough and comprehensive understanding of the ML/TF risks to which insurers and/or intermediaries are exposed;
- uses available information to assess the ML/TF risks to the insurance sector in its jurisdiction on a regular basis; and
- applies a Risk-Based Approach (RBA) consistent with FATF Recommendations.

22.1.1 Consistent with the FATF Recommendations, RBA refers to:

- the general process by which a supervisor, according to its identification, understanding and assessment of risks, allocates its resources to AML/CFT supervision; and
- the specific process of supervising institutions (ie insurers and intermediaries, as applicable) that apply an AML/CFT RBA.

Understanding ML/TF risks

22.1.2 The supervisor should have a thorough and comprehensive understanding of the ML/TF risks to which insurers and intermediaries are exposed arising from the activities undertaken and products and services offered by insurers and intermediaries.

22.1.3 In the context of ML/TF, “risk” encompasses threats, vulnerabilities, and consequences in relation to products (including services and transactions), geography, customers and delivery channels.

22.1.4 Some of the examples of attributes included below can be expected over the course of a long-term insurance contract and are not necessarily inherently suspicious, but rather should be viewed as factors to consider with respect to AML/CFT RBA.

22.1.5 Product-related risk refers to the vulnerability of a product to ML/TF based on its design. The following are examples of product attributes which may tend to increase the ML/TF risk profile:

- acceptance of very high value or unlimited value payments or large volumes of lower value payments;
• acceptance of non-traceable payments such as cash, money orders, cashier cheques, or virtual assets;
• acceptance of frequent payments outside a normal premium or payment schedule;
• allowance of withdrawals at any time or early surrender, with limited charges or fees;
• products that allow for high cash values;
• products that accept high amount lump sum payments, coupled with liquidity features;
• products with provisions that allow a policy to be cancelled within a stipulated timeframe and the premiums paid to be refunded; and
• products that allow for assignment without the insurer being aware that the beneficiary of the contract has been changed until such time as a claim is made.

22.1.6 Product-related risk also encompasses the vulnerability of a product to use by a third party or to unintended use based on the methods of transactions available (ie service- and transaction-related risk). The following are examples of service and transaction attributes which may tend to increase the ML/TF risk profile:

• products with features or services which make it possible for customers to use the product in a way that is inconsistent with its purpose (for example, an insurance policy intended to provide long term investment opportunity but which allows frequent or low fee deposit / withdrawal transactions);
• customer is not the payer or recipient of the funds;
• products with features that allow loans to be taken against the policy (particularly if frequent loans can be taken and/or repaid with cash);
• acceptance to be used as collateral for a loan and/or written in a discretionary or other increased risk trust;
• payment source or recipient of funds are outside of the jurisdiction (eg insurer in jurisdiction A and payment source in jurisdiction B); and
• significant, unexpected, or unexplained change in customer’s pattern of payment, withdrawal, or surrender.

22.1.7 Geographic-related risk refers to the risk that a market’s or customer’s geographic location or connections will enhance vulnerability to ML/TF. The following are examples of geographic attributes which may tend to increase the ML/TF risk profile:

• jurisdictions identified by credible sources as having weak governance, law enforcement and regulatory regimes,
including jurisdictions identified by FATF statements as having weak AML/CFT regimes;

- jurisdictions identified by credible sources as having significant levels of organised crime, corruption, or other criminal activity, including source or transit countries for illegal drugs, human trafficking, smuggling and illegal gambling; and

- jurisdictions subject to sanctions, embargoes, or similar measures issued by international organisations (such as the United Nations).

22.1.8 Customer-related risk refers to the risk that the insurer is doing business with a customer who is not adequately identified or may be involved with ML/TF. Customer-related risk factors include: customer identity; third-party involvement; customer source of wealth and funds; politically exposed customers; and known criminals or terrorists. The following are examples of customer attributes which may tend to increase the ML/TF risk profile:

- structure of a legal entity that is a customer, policyholder, or beneficiary obscures or makes it difficult to identify the ultimate beneficial owner or controlling interests;

- customer is reluctant to provide identification; exhibits difficulty producing identification; or provides identification documents of questionable authenticity;

- involvement of a gatekeeper or a third party apparently unrelated to the customer;

- higher risk business or occupation (such as those that are cash-intensive);

- mismatch between wealth and income of the customer and proposed premium amounts, deposit amounts or policy limits;

- customer is associated with negative news which may affiliate the customer with allegations of criminal behaviour; or has ties to or is on a designated sanctions list; and

- customer is considered a politically exposed person.

22.1.9 Delivery channel refers to the method offered to or used by a customer to start a new policy or account. Delivery channel-related risk refers to the vulnerability of the delivery channel to ML/TF based on attributes that may make it easier to obscure customer identity or the source of funds. The following are examples of delivery channel attributes which may tend to increase the ML/TF risk profile:

- non face-to-face sales without adequate safeguards for confirmation of identification or to mitigate the risks of identity fraud; and

- payments via intermediary that may obscure the source of payment (eg long chain of intermediaries).
Assessing ML/TF risks

22.1.10 The supervisor should assess the main ML/TF risks to the insurance sector in its jurisdiction. Such risk assessments may provide for recommendations on the allocation of responsibilities and resources at the jurisdictional level based on a comprehensive and up-to-date understanding of the risks. These assessments will change over time, depending on how circumstances develop, and how risks evolve. For this reason risk assessments should be undertaken on a regular basis and kept up to date.

22.1.11 The supervisor should consider the potential ML/TF risks alongside other risk assessments (for example, governance and market conduct) arising from its wider duties.

22.1.12 When a jurisdiction-wide risk assessment has been conducted (for example, during a National Risk Assessment (NRA) process as contemplated in FATF Recommendations, if applicable), the supervisor should have access to the results and take them into account. The supervisor should participate in such an assessment to inform the assessment and to improve its understanding of the risks.

22.2 The supervisor:

- issues to insurers and/or intermediaries enforceable means on AML/CFT obligations consistent with the FATF Recommendations, for matters which are not in primary legislation;
- establishes guidance that will assist insurers and/or intermediaries to implement and comply with their respective AML/CFT requirements; and
- provides insurers and/or intermediaries with adequate and appropriate feedback to promote AML/CFT compliance.

22.2.1 While the FATF Recommendations require the basic obligations of customer due diligence (CDD), record keeping and the reporting of suspicion to be set in primary legislation, the more detailed elements for technical compliance may be set in primary legislation or enforceable means (ie regulations, guidelines, instructions or other documents or mechanisms) that set out enforceable requirements in mandatory language with sanctions for non-compliance.

22.2.2 In some jurisdictions the supervisor, while an AML/CFT competent authority, may not be empowered to issue enforceable means; in that case the supervisor should cooperate and coordinate with the relevant authority holding such power.

22.2.3 The supervisor should require insurers and/or intermediaries to take appropriate steps to identify, assess and understand their ML/TF risks in relation to products (including services and transactions), geography, customers and delivery channels. The supervisor should also require insurers and intermediaries to manage and mitigate the ML/TF risks that have been identified.

22.2.4 The supervisor should promote a clear understanding by insurers and intermediaries of their AML/CFT obligations and ML/TF risks. This may
be achieved by engaging with insurers and intermediaries and by providing information on supervision. For example, the supervisor may provide guidance on issues covered under the relevant FATF Recommendations (as implemented in primary legislation or enforceable means) including possible techniques and methods to combat ML/TF and any additional measures that insurers and/or intermediaries could take to ensure that their AML/CFT measures are effective. Such guidance may not necessarily be enforceable but will assist insurers and/or intermediaries to implement and comply with AML/CFT requirements.

22.2.5 Examples of appropriate feedback mechanisms used by the supervisor may include information on current ML/TF techniques, methods and trends (typologies), sanitised examples of actual ML/TF cases, examples of failures or weaknesses in AML/CFT systems by insurers and intermediaries, and lessons to be learned. It may be appropriate for the supervisor to refer to guidance or contribute to feedback from other sources, for example industry guidance and resources made available by the FATF.

22.3 The supervisor has an effective supervisory framework to monitor and enforce compliance by insurers and/or intermediaries with AML/CFT requirements.

22.3.1 The supervisor should take into account the risk of ML/TF at each stage of the supervisory process, where relevant, including the licensing stage.

22.3.2 The supervisor should have adequate financial, human and technical resources to combat ML/TF. Staff of the supervisor should be appropriately skilled and provided with adequate and relevant training for assessing and combating ML/TF risks, including the necessary skills and knowledge to assess the quality and effectiveness of an insurer’s and intermediary’s AML/CFT systems and controls.

22.3.3 The supervisor should subject insurers and/or intermediaries to supervisory review (off-site monitoring and/or on-site inspection) of their compliance with the AML/CFT requirements and, on the basis of the information arising from such monitoring and any other information acquired, assess the ML/TF risk profile of the insurer or intermediary.

22.3.4 The frequency and intensity of supervisory review should be based on:

- the ML/TF risks present in the jurisdiction including as identified in an NRA, if applicable, or other jurisdiction-wide risk assessment;
- the characteristics of insurers and/or intermediaries, in particular their number and diversity and the degree of discretion allowed to them under the RBA;
- the ML/TF risks and the policies, internal controls and procedures of each insurer and/or intermediary, as identified by the supervisor’s assessment of their ML/TF risk profile; and
• the inherent and residual risks in relation to the particular insurer or intermediary based on the firm’s own RBA of its ML/TF risks.

22.3.5 The supervisor should require insurers and/or intermediaries to undertake AML/CFT assessments on a regular basis, and to develop ML/TF risk profiles of their products (including services and transactions), geography, customers and delivery channels. The supervisor should require insurers and intermediaries to put in place risk management and control measures to effectively address identified risks.

22.3.6 The supervisor should have the power and resources to take proportionate, dissuasive and effective measures (including sanctions and other remedial and corrective measures) where insurers and intermediaries do not implement AML/CFT requirements effectively.

22.3.7 The supervisor should also require insurers and intermediaries to provide regular and timely training in AML/CFT to Board Members, Senior Management and other staff as appropriate, which is supported by a communication strategy which ensures that notification of significant changes in AML/CFT policies are regularly and timely provided.

22.4 The supervisor regularly reviews the effectiveness of the measures that insurers and/or intermediaries and the supervisor itself are taking on AML/CFT. The supervisor takes any necessary action to improve effectiveness.

22.4.1 Reviews should include regular assessment by the supervisor of the effectiveness of implementation by insurers and/or intermediaries of AML/CFT requirements and of its supervisory approach, including the extent to which the supervisor’s actions have an effect on compliance by insurers and/or intermediaries.

22.4.2 These reviews may cover aspects such as:

• the ML/TF risks of a particular insurer and/or intermediary and whether these are adequately addressed by the firm’s RBA;
• the adequacy of resources and training of both the supervisor and the insurance sector;
• whether AML/CFT off-site monitoring is adequate;
• whether the number and content of on-site inspections relating to AML/CFT measures is adequate;
• the findings of off-site monitoring and on-site inspections, including the effectiveness of training and implementation by insurers and intermediaries of AML/CFT measures;
• measures and sanctions taken by the supervisor against insurers and/or intermediaries;
• input from other AML/CFT authorities and the FIU on the insurance sector, such as the number and pattern of
suspicious transaction reports made by insurers and/or intermediaries;

- the number and nature of requests for information from other authorities concerning AML/CFT matters;

- the adequacy of the requirements, guidance and other information provided by the supervisor to the insurance sector and feedback received from the insurance sector; and

- the number and type of ML/TF prosecutions and convictions in the insurance sector.

Such reviews should enable the supervisor to identify any necessary actions which need to be taken to improve effectiveness of the AML/CFT measures being taken by insurers, and/or intermediaries and the supervisor itself.

22.4.3 The supervisor should maintain records on the frequency of off-site monitoring and number of on-site inspections relating to AML/CFT and on any measures it has taken or sanctions it has issued against insurers and/or intermediaries with regard to inadequate AML/CFT measures or non-compliance with AML/CFT requirements.

22.5 The supervisor has effective mechanisms in place which enable it to cooperate, coordinate and exchange information for AML/CFT purposes with other domestic authorities as well as with supervisors in other jurisdictions.

22.5.1 Effective prevention and mitigation of ML/TF is enhanced by close cooperation within a supervisor’s organisation and among supervisors, the FIU, law enforcement agencies and other relevant authorities. Mechanisms of cooperation, coordination and exchange of information among relevant authorities should be documented and normally address:

- Operational cooperation and, where appropriate, coordination; and

- policy cooperation and, where appropriate, coordination.

22.5.2 Where the supervisor identifies suspected ML/TF in insurers or intermediaries, it should ensure that relevant information is provided in a timely manner to the FIU, any appropriate law enforcement agency and other relevant authorities.

22.5.3 The supervisor should take all necessary steps to cooperate, coordinate and exchange information with the other relevant authorities. The supervisor should communicate with the FIU and appropriate law enforcement agency to ascertain any concerns it has and any concerns expressed on AML/CFT compliance by insurers and intermediaries, to obtain feedback on trends in reported cases, and to obtain information regarding potential ML/TF risks to the insurance sector.

22.5.4 To promote an efficient exchange of information, the supervisor should consider identifying within its office a point of contact for AML/CFT issues and to liaise with other relevant authorities.
22.5.5 The exchange of information for AML/CFT purposes is subject to confidentiality considerations (see ICP 3 Information Sharing and Confidentiality Requirements).

Part B: Where the supervisor is not a designated AML/CFT competent authority

22.6 The supervisor is aware of and has an understanding of ML/TF risks to which insurers and/or intermediaries are exposed. The supervisor liaises with and seeks to obtain information from the designated competent authority relating to AML/CFT by insurers and intermediaries.

22.6.1 The supervisor should have an understanding of the ML/TF risks to which insurers and/or intermediaries are exposed arising from activities undertaken in relation to products (including services and transactions), geography, customers and delivery channels, and the jurisdiction’s approach to assessing and mitigating them.

22.6.2 To enhance such understanding, it is helpful if the supervisor has access to the NRA, if applicable, or other jurisdiction-wide risk assessment.

22.6.3 The supervisor should be able to make a more informed evaluation and judgment on the soundness of insurers and intermediaries by receiving information from the designated AML/CFT competent authority. Such information may be relevant to the risk profile of, or to the effectiveness of risk management by, an insurer or intermediary. The contents of this information may include the level of ML/TF risks to which insurers and/or intermediaries are exposed, and the designated competent authority’s views on the corporate governance, risk management and internal control measures of supervised entities relevant to AML/CFT.

22.6.4 The designated AML/CFT competent authority may have information on breaches of AML/CFT requirements that should be taken into consideration by the supervisor in its supervisory activities, such as when evaluating the suitability of the Board, Senior Management and Key Persons in Control Functions, including when reviewing licence applications.

22.7 The supervisor has effective mechanisms in place which enable it to cooperate, coordinate and exchange information for AML/CFT purposes with relevant domestic authorities as well as with supervisors in other jurisdictions.

22.7.1 Effective prevention and mitigation of ML/TF is enhanced by close cooperation within a supervisor’s organisation and among supervisors, the FIU, law enforcement agencies and other relevant authorities. Mechanisms of cooperation, coordination and exchange of information among relevant authorities should be documented and normally address operational cooperation and, where appropriate, coordination.

22.7.2 When the supervisor becomes aware of information on ML/TF risks, it should provide relevant information to the designated AML/CFT competent authority. When the supervisor identifies suspected ML/TF in insurers and/or intermediaries, it should ensure that relevant information is provided to the FIU, appropriate law enforcement agencies and any relevant supervisors.
22.7.3 As part of its cooperation with the designated AML/CFT competent authority, the supervisor should provide input into the effectiveness of the AML/CFT framework. This may help the designated competent authority in its consideration of the framework’s effectiveness.

22.7.4 The exchange of information for AML/CFT purposes is subject to confidentiality considerations (see ICP 3 Information Sharing and Confidentiality Requirements).
ICP 23  Group-wide Supervision

The group-wide supervisor, in cooperation and coordination with other involved supervisors, identifies the insurance group and determines the scope of group supervision.

Introductory Guidance

23.0.1 Involved supervisors should seek agreement amongst themselves on the identification of the insurance group, including the head of the insurance group, and the scope of group-wide supervision to ensure that gaps or duplication in regulatory oversight between jurisdictions do not occur. If agreement cannot be reached in a timely manner, the ultimate responsibility for determining the identification of the insurance group and scope of group-wide supervision rests with the group-wide supervisor. Decisions should be undertaken on a case-by-case basis and may include discussion with the insurance group.

23.0.2 The group-wide supervisor cooperates and coordinates with other involved supervisors, and should be accountable for the appropriateness of the identification of the insurance group and the determination of the scope of group supervision. In particular, in the case of insurance groups that operate on a cross-border basis, the group-wide supervisor should be able to explain the appropriateness of the identification of the insurance group and the determination of the scope of group supervision to involved supervisors in other jurisdictions. The identification of the insurance group and scope of group supervision should be reviewed regularly by the group-wide supervisor, in cooperation and coordination with other involved supervisors.

23.0.3 The group-wide supervisor should require the head of the insurance group to provide information needed on an ongoing basis to identify the insurance group and to determine the scope of group-wide supervision. The head of the insurance group provides the information to the group-wide supervisor, who disseminates it to the other involved supervisors as needed.

CF 23.0.a The group-wide supervisor, in cooperation with other involved supervisors, determines whether an insurance group or an insurance legal entity operating through branches, is an IAIG after considering whether it meets both the following criteria:

- Internationally active:
  - Premiums are written in three or more jurisdictions; and
  - Gross written premiums outside of the home jurisdiction are at least 10% of the group’s total gross written premiums.

- Size (based on a three-year rolling average):
| CF 23.0.a.1 | The criteria should be assessed based on the insurance group’s reported financial statements, either on a consolidated basis when available or as otherwise submitted to the group-wide supervisor. Intra-group transactions should be eliminated when calculating the amount of insurance business written in each jurisdiction and total insurance business written, and when calculating the total assets of the group. |
| CF 23.0.a.2 | “Total assets” are, at least, group assets related to the insurance business of the group. |
| CF 23.0.a.3 | “Gross written premiums” represent a measure of the volume of insurance business being written. Where alternative but similar volume measures are required under the accounting framework applicable to the group, then these alternative measures may be used as a more practical way of deciding if a group meets the criterion for an IAIG. An example of an alternative measure may be “premiums received” as required for disclosure purposes under International Financial Reporting Standard 17. |
| CF 23.0.a.4 | Although an insurance legal entity that has no parent or subsidiaries is not an insurance group, it should be regarded as an IAIG if it operates on a branch basis in foreign jurisdictions and meets the criteria. The supervisor of this entity, in cooperation with other involved supervisors, would determine whether the IAIG criteria are met. References to a ‘group’ in this context would include such entities operating through branches which are identified as IAIGs. |
| CF 23.0.a.5 | For the purposes of assessing groups against the internationally active criterion, the United States of America should be regarded as a single jurisdiction and member states of the European Union should be regarded as separate jurisdictions. |
| CF 23.0.a.6 | Any involved supervisor may prompt the process of identifying an IAIG. If no group-wide supervisor has been determined, the supervisor most demonstrating the characteristics of a group-wide supervisor should invite involved supervisors to participate in the process of determining whether a group is an IAIG. |
| CF 23.0.a.7 | The scope of an insurance group should be determined before considering whether the criteria for determining whether the group is an IAIG are met. |
| CF 23.0.a.8 | If there is already a supervisory college for a group, it should be used to facilitate the determination as to whether the group is an IAIG. |
| CF 23.0.b | In limited circumstances the group-wide supervisor has discretion to determine that a group is not an IAIG even if it meets the criteria or that a group is an IAIG even if it does not meet the criteria. |

- Total assets are at least USD 50 billion, or
- Total gross written premiums are at least USD 10 billion.
CF 23.0.b.1 If discretion has been used, then the reasons for exercising such discretion should be based on verifiable and documented quantitative and qualitative information.

CF 23.0.b.2 Examples of situations where a group-wide supervisor may exercise discretion to determine that a group is an IAIG despite not meeting all the criteria are where:

- an other involved supervisor requests that the group be treated as an IAIG owing to the materiality of the operations in its jurisdiction;
- the group is expected to meet the criteria in the near future owing to mergers or acquisitions;
- the group's international activity or size have decreased owing to some temporary or transitory effect such as an economic shock or exchange rate fluctuations and it would not be reasonable to alter the group's identification as an IAIG for a short period;
- the group has related entities which are not included in the consolidated financial statements, but which are relevant to the risks of the group;
- the group has significant off-balance sheet assets (such as funds under management held on behalf of investors) which arise from insurance operations and so are more appropriately included in the total assets when assessing the group against the size criterion;
- the group changes or rearranges its business activities to avoid meeting the IAIG criteria including by splitting the insurance business into multiple sub-groups with separate operational controllers.

CF 23.0.b.3 Examples of situations where a group-wide supervisor may exercise discretion to determine that a group is not an IAIG despite meeting the criteria are where:

- the group will cease to meet the criteria in the near future owing to, for example, disposals of some or all of its insurance business;
- the group’s international activity or size have increased owing to some temporary or transitory effect such as an economic shock or exchange rate fluctuations and it would be unreasonable to identify the group as an IAIG for a short period; and
- the group’s business outside of the home jurisdiction exceeds 10% in aggregate but its business in any one jurisdiction outside the home jurisdiction is negligible.

CF 23.0.c The group-wide supervisor notifies the group of its decision to identify it as an IAIG and reasons for that decision.
The group-wide supervisor, in cooperation with other involved supervisors, regularly reviews previously made determinations concerning whether a group is an IAIG.

CF 23.0.d.1 Such reviews should take place at least once every three years.

CF 23.0.d.2 An ad hoc assessment should take place in circumstance where a significant change or event may impact the identification of a group as an IAIG.

23.1 The group-wide supervisor, in cooperation and coordination with other involved supervisors, identifies all legal entities that are part of the insurance group.

23.1.1 To ascertain the identity of an insurance group, supervisors should first identify all insurance legal entities within the corporate structure.

23.1.2 Supervisors should then identify all entities which have control over those insurance legal entities in the meaning provided for in the definition in ICP 6 (Changes in Control and Portfolio Transfers). If this results in only one identified entity, this entity is the head of the insurance group. If there is more than one entity with control over the insurance legal entities, supervisors should identify the head of the insurance group such as the entity which has the greatest level of control over the insurance business.

23.1.3 A practical method for determining the entities within the insurance group is often to start with entities included in the consolidated accounts. The head of an insurance group including an insurance-led financial conglomerate is at least one of the following:

- an insurance legal entity; or
- a holding company.

The identified insurance group includes the head of the insurance group and all the legal entities controlled by the head of the insurance group. Legal entities within a group could include:

- operating and non-operating holding companies (including intermediate holding companies);
- other regulated entities such as banks and/or securities companies;
- non-regulated entities; and
- special purpose entities.

In addition to considering the consolidated accounts, the supervisor should consider other relationships such as

- common Directors;
- membership rights in a mutual or similar entity;
- involvement in the policy-making process; and
- material transactions.

The insurance group may be
• a subset/part of a bank-led or securities-led financial conglomerate; or
• a subset of a wider group, such as a larger diversified conglomerate with both financial and non-financial entities.

23.1.4 Examples of the types of group structures that could be captured by the definition of insurance groups are provided in the diagrams below (Figure 23.1, 23.2, 23.3 and 23.4). These examples are for purposes of illustration only, and are not intended to set forth all possible forms of insurance groups.

23.1.5 The ICPs’ definition of “insurance group” may be different from the definitions used in other contexts, such as accounting or tax purposes.

| CF 23.1.a | The group-wide supervisor identifies the Head of the IAIG as the legal entity which controls all of the insurance legal entities within the group and non-insurance legal entities which pose risk to the insurance operations. |
| CF 23.1.b | When identifying the Head of the IAIG, the group-wide supervisor considers both control as defined in ICP 6 (Changes in control and portfolio transfers) and operational control. |
| CF 23.1.b.1 | Operational control means the ability in practice, whether or not a legal right exists, to do some or all of the following: |
| | • select, appoint, or remove Board Members of related entities; |
| | • determine remuneration of Board Members of related entities; |
| | • set or influence capital expenditure and investment plans; |
| | • set a dividend strategy and levels of surplus capital to be retained; |
| | • determine new lines of business to be undertaken; |
| | • set risk management policies and processes; and |
| | • require reporting of management information. |
| CF 23.1.c | When identifying the Head of the IAIG, if there is more than one entity which controls all of the insurance legal entities, the group-wide supervisor determines the Head of the IAIG to be the entity that exercises the greatest level of control over all the insurance legal entities by considering the following factors: |
| CF 23.1.c.1 | Considering the above factors is particularly relevant when an IAIG has a vertical structure with several intermediate holding companies, |
is a financial or industrial conglomerate, or has several insurance sub-groups.

CF 23.1.c.2  Consideration of which entity controls the greatest proportion of insurance business relative to other business may lead the group-wide supervisor to determine that the Head of the IAIG is an intermediate holding company rather than the ultimate parent of the group.

CF 23.1.c.3  Consideration of where operational control is greatest may lead the group-wide supervisor to determine that the Head of the IAIG is an intermediate holding company rather than the ultimate parent of the group. It may also lead the group-wide supervisor to determine that one insurance legal entity is the Head of the IAIG by virtue of its operational control over another insurance legal entity even where it does not own that entity.

CF 23.1.c.4  Consideration of where shareholder control is greatest may lead the group-wide supervisor to determine that the ultimate parent in a conglomerate is the Head of the IAIG rather than an intermediate holding company.

CF 23.1.d  The group-wide supervisor considers that a non-insurance legal entity within the group poses risk to the insurance operations where there is:

- a linkage between the insurance operations and the non-insurance legal entity (other than an investment in or from the non-insurance legal entities) that could adversely affect the insurance operations; and

- a lack of adequate safeguards, including additional capital, to mitigate risks arising from any such linkages.

CF 23.1.d.1  Consideration of the control exerted over non-insurance legal entities within the group may lead the group-wide supervisor to determine that the Head of the IAIG is the ultimate parent of the group rather than an intermediate holding company.

CF 23.1.d.2  A parent of the insurance legal entities is less likely to pose a risk to the insurance operations if the only linkage between it and the insurance legal entities is of the nature of a passive investment and so no operational control is being exerted.

CF 23.1.d.3  The group-wide supervisor should be able to require preventive or corrective measures at the same level at which all the risks to insurance operations in the group (including funding risks) are mitigated by capital.

CF 23.1.e  Where a legal entity controls all insurance legal entities within the group and non-insurance legal entities which pose risks to the insurance operations, the group-wide supervisor has discretion to identify a subsidiary of that entity as the Head of the IAIG if:

- prudential supervision is exercised by another financial sector supervisor over that entity; and

- the group-wide supervisor can rely on the other financial sector supervisor to provide sufficient information concerning
risk that this entity and the legal entities it controls pose to the insurance operations.

CF 23.1.e.1 The Head of an IAIG should not be a bank when:
- that bank is subject to prudential supervision exercised by another financial supervisor; and
- the group-wide supervisor is able to rely on this other financial sector supervisor to obtain information on the wider group and to ensure that the group is adequately capitalised.

CF 23.1.e.2 If this precludes there being a single Head of the IAIG which controls all the insurance legal entities, then the group may be supervised as two or more separate IAIGs even if separately those IAIGs would not meet the size and international activity criteria.

CF 23.1.f The group-wide supervisor provides the supervisory college with the main reasons and judgements it made when identifying the Head of the IAIG.

CF 23.1.f.1 As the supervisory college may qualify as a crisis management group for the IAIG (IAIG CMG), when identifying the Head of the IAIG, the group-wide supervisor should understand where resolution powers are applicable. The Head of the IAIG identified for prudential supervision purposes may not be the same as the entity at the level of which resolution powers will apply.

23.2 The group-wide supervisor, in cooperation and coordination with other involved supervisors, determines the scope of group-wide supervision.

23.2.1 Involved supervisors should consult and agree on the scope of group-wide supervision of the insurance group to ensure that there are no gaps and no unnecessary duplication in supervision among jurisdictions.

23.2.2 A practical method to determine the entities to capture within the scope of group-wide supervision is to start with entities included in the consolidated accounts. Entities that are not included in consolidated accounts should be included if they are relevant from the perspective of risk (non-consolidated entities also subject to supervision) or control. The entities that may be captured within the scope of group-wide supervision may either be incorporated or unincorporated.

23.2.3 In considering the risks to which the insurance group is exposed it is important to take account of those risks that emanate from the wider group within which the insurance group operates.

23.2.4 Individual entities within the insurance group may be excluded from the scope of group-wide supervision if the risks from those entities are negligible or group-wide supervision is impractical.

23.2.5 The exclusion or inclusion of entities within the scope of group-wide supervision should be regularly re-assessed.

23.2.6 It should be noted that the supervisory approach to entities/activities within the insurance group may vary depending on factors such as their types of business, legal status and/or nature, scale and complexity of
risks. Although an insurance group as a whole should be subject to group-wide supervision, not all quantitative and qualitative supervisory requirements applied to an insurance legal entity should necessarily be applied to other entities within the group, to the insurance group as a whole, or to a sub-group collectively.

CF 23.2.a In conducting group-wide supervision, the group-wide supervisor obtains information necessary to apply standards to the Head of the IAIG concerning all the legal entities controlled by the Head of the IAIG (the IAIG) including from:

- the Head of the IAIG;
- with the cooperation of other involved supervisors, insurance legal entities controlled by the Head of the IAIG; and
- other non-insurance legal entities, whether or not controlled by the Head of the IAIG.

The group-wide supervisor decides from which legal entities information should be sought.

CF 23.2.a.1 The group-wide supervisor may need to obtain information about related group entities, such as:

- any intermediate holding company or ultimate parent of the Head of the IAIG;
- any significant owner of the IAIG;
- any person exerting significant influence over the IAIG;
- any financial entity which is subject to supervision by an authority other than an insurance supervisor; or
- entities excluded from the consolidated data used to assess group solvency.

CF 23.2.a.2 Where there are entities related to the Head of the IAIG from which information is necessary for supervisory purposes, then the group-wide supervisor should obtain that information from those entities or from other sources, for example:

- the Head of the IAIG (insofar as the Head of the IAIG can legally procure that information);
- any supervisor of a related non-insurance financial entity; or
- the members of the Board, Senior Management and Key Persons in Control Functions involved in the insurance business, irrespective of the entity employing those persons.

CF 23.2.a.3 The group-wide supervisor should understand how risks in non-regulated related group entities affect, for example, the risk management and capital adequacy of the IAIG. However this does not require the group-wide supervisor to supervise directly such entities.
23.3 The group-wide supervisor and other involved supervisors do not narrow the identification of the insurance group or the scope of group-wide supervision due to lack of legal authority or supervisory power over particular legal entities.

23.3.1 In some jurisdictions, the supervisor may not be granted legal authority or supervisory power for the direct supervision of some entities within the identified insurance group or the scope of group-wide supervision. These may include legal entities regulated in another sector or non-regulated entities within the same jurisdiction.

23.3.2 Where a supervisor has no direct legal power over certain legal entities in the scope of the group-wide supervision, the supervisor will use its power over regulated entities and/or consult with other involved supervisors to obtain similar supervisory outcomes.

Illustrations to assist the identification of insurance groups

Figure 23.1 Insurance Group
Figure 23.2 Financial Conglomerate

Financial Conglomerate

- Head of the Financial Conglomerate
- Securities sub-group
- Banking sub-group
- Insurance Holding Company
  - Insurance Legal Entity
  - Insurance Legal Entity
  - Non-regulated Subsidiary
- Non-regulated Subsidiary
- Non-regulated Subsidiary
Figure 23.3 Insurance-led Financial Conglomerate

Insurance-led Financial Conglomerate

- Head of the Financial Conglomerate, Head of the Insurance group
  - Insurance Legal Entity
  - Non-regulated Subsidiary

- Banking Group
  - Banking Holding Company
  - Banking Legal Entity
  - Non-regulated subsidiary

- Securities Group
  - Securities Holding Company
  - Securities Legal Entity
  - Non-regulated Subsidiary
Figure 23.4 Wider group
ICP 24  Macroprudential Supervision

The supervisor identifies, monitors and analyses market and financial developments and other environmental factors that may impact insurers and the insurance sector, uses this information to identify vulnerabilities and address, where necessary, the build-up and transmission of systemic risk at the individual insurer and at the sector-wide level.

Introductory guidance

24.0.1 This ICP focuses on the general processes and procedures supervisors should have in place with respect to macroprudential supervision, as part of the overall supervisory framework (see ICP 9 Supervisory Review and Reporting). A jurisdiction’s macroprudential supervision processes and procedures should be proportionate to the nature, scale and complexity of its insurance sector’s exposures and activities.

24.0.2 Macroprudential supervision consists of data collection, market and trend analysis, systemic risk assessment, supervisory response and transparency. It identifies and, where necessary, addresses both vulnerabilities of individual insurers and the insurance sector to shocks (inward risks) and the build-up of systemic risk at the individual insurer level or the sector as a whole (outward risks). Inward risks include insurance and financial market developments, which may impact the insurance sector. Outward risks refer to the risks that individual insurers or the insurance sector may pose to the financial system and the real economy. Macroprudential supervision contributes to financial stability by minimising the incidence and impact of externalities on the financial system and real economy generated or amplified through the distress or default of individual insurers or common behaviours.

24.0.3 Macroprudential supervision involves the identification, monitoring and assessment of:

- sector-wide vulnerabilities and common exposures in the insurance sector; and
- the risk of amplification and transmission of shocks to the financial system and real economy caused by:
  - the size, complexity, lack of substitutability and/or interconnectedness of a distressed or failing insurer; or
  - collective actions or distress of a sufficiently large number of insurers undertaking similar activities and thus exposed to common risks.

24.0.4 Systemic risk may be defined as the risk of disruption to financial services that is caused by an impairment of all or parts of the financial system and has the potential to have serious negative consequences for the real economy. Systemic impact may originate from individual or sector-wide exposures to liquidity risk, interconnectedness (macroeconomic and counterparty exposure) or lack of substitutability as well as from other
risks. These risks may spread to other parts of the financial system via asset liquidation, exposures or critical functions.

24.0.5 Macroprudential supervision can help identify the need for supervisory measures. In its macroprudential supervision, the supervisor should also take into account the material risks that non-insurance legal entities and activities may pose to insurance legal entities, insurance groups and the wider financial system.

24.0.6 The supervisory framework should allow the supervisor to respond in a timely manner to findings from the analysis performed as part of its macroprudential supervision.

Data collection for macroprudential purposes

24.1 The supervisor collects data necessary for its macroprudential supervision.

24.1.1 Data collection for macroprudential purposes should take into account the following general aspects:

- Efficiency of data collection: the supervisor should examine costs and benefits when considering data collection. Data collections should be aligned with their respective usage. The supervisor should first make use of all available data sources and then calibrate its data requests and data processing capabilities;

- Data validation: before analysing data and providing recommendations on the findings, the supervisor should validate data used in its assessment;

- Data quality assurance: the supervisor should regularly evaluate the appropriateness of data collected and data needs to capture market developments and address deficiencies in:
  - the type of data collected;
  - its ability to process data in a timely and/or complete way; and
  - its ability to collect ad hoc data in a timely manner.

- Scope: for sector-wide assessments, data collection should cover a representative sample of the respective market or risk;

- Consistency: regular data collections of a standardised set of information should remain consistent over time in order to analyse trends. The supervisor should, however, consider the evolving nature of the relevant exposures; and

- Ad hoc data collection: in order to address emerging risks, the supervisor should have processes in place that allow for ad hoc data collections.

24.1.2 To support the assessment of liquidity risk, the supervisor should collect data that provide sufficient indications on possible liquidity mismatch between assets and liabilities both at individual and sector-wide level. Reporting requirements on liabilities should include, but not be limited to, information on the surrender value of insurance products, product features that increase or decrease the propensity for early pay outs under certain circumstances (such as penalties or delays in the ability to access
the cash value of a policy), and the maturity or redemption structure of non-insurance liabilities. On the asset side information on the degree of liquidity of the assets and on the potential margin call on derivatives should be collected.

24.1.3 To support the assessment of macroeconomic exposure, the supervisor should collect data that is sufficiently granular to enable an analysis of an insurer’s, as well as the insurance sector’s vulnerability to macroeconomic shocks (such as sensitivity to interest rate movements) and general market movements (such as sensitivity to equities and fixed income asset movements).

24.1.4 To support the assessment of counterparty risk, the supervisor should collect data that includes the concentration of the assets and liabilities, with regard to counterparties, markets (such as equity or debt), sectors (such as financial or real estate), and geographical areas.

24.1.5 The supervisor should collect microeconomic data, such as insurance pricing, underwriting, expenses, claims inflation, reinsurance, intra-group transactions, and general developments in the insurance sector (for example, the development of claims, earned and guaranteed interest rates, reserves, pandemics, and changes in morbidity and mortality, longevity, changes in the frequency and severity of catastrophes changes in medical expense inflation and changes in law). In addition, the supervisor may collect data on both the asset and the liability structure of insurers, including those that are related to non-insurance activities. The supervisor should consider having established processes and communication channels on microeconomic data collection with other involved supervisors when an insurer operates in multiple jurisdictions.

24.1.6 The supervisor should collect macroeconomic data to complement information mainly gathered as a result of supervisory reporting. Data may include general domestic and international macroeconomic variables (such as interest rates, exchange rates, inflation or balance of payments, as well as data on market structure and competitiveness) which could identify macroeconomic instabilities and sources of risk both in the domestic and the global economy. Macroeconomic data may be used to assess the exposure of insurers’ portfolios of both assets and liabilities to economy-wide factors. For insurers operating in multiple jurisdictions, the supervisor should consider collecting relevant macroeconomic data for material jurisdictions.

**Insurance sector analysis**

24.2 The supervisor, as part of its macroprudential supervision, performs analysis of financial markets and the insurance sector that:

- is both quantitative and qualitative;
- considers historical trends as well as the current risk environment; and
- considers both inward and outward risks.

24.2.1 To enable macroprudential supervision, the supervisor should have processes and procedures in place that would allow for analysis on insurance sector trends that could potentially result in externalities to the
wider financial system and/or adversely impact the insurance sector. These trends include changes in economic conditions and technology, as well as environmental, social and governance developments. Such processes and procedures should also recognise that changes in the exposures of insurers can potentially have macroprudential risk implications.

Quantitative and qualitative analysis

24.2.2 Quantitative analysis includes identifying trends, outliers, interconnectedness and/or risk concentrations of existing or newly identified vulnerabilities. Typical methods of quantitative analysis may include:

- horizontal reviews;
- descriptive statistics;
- trend analysis; and
- statistical modelling using past data.

24.2.3 Qualitative analysis includes performing assessments based on judgment, experience, information and any other factors that either cannot be measured or quantified with typical methods. Qualitative analysis may be particularly relevant for the assessment of low probability high impact type of events with limited quantifiable data available.

24.2.4 The supervisor should conduct horizontal reviews to reveal the range of practices among insurers relevant to a common subject (for example, the assessment of the appropriateness of insurers' assumptions used for reserving). A horizontal review may help to determine which insurers are outliers, and as such provides the supervisor with a reference for potential further actions. A horizontal review may provide an aggregated view of the risks linked to certain exposures and/or activities and may also help determine whether industry practice as a whole is effective enough to address the risks embedded in the activity.

24.2.5 To make horizontal reviews effective, the following may be taken into account:

- where peer groups are used, the choice of the peer group can have an impact on the outcome of the review. The supervisor should carefully consider the criteria for including insurers in a peer group;
- when reviewing an insurer operating in multiple jurisdictions, the group-wide supervisor should form a group-wide perspective. Such a perspective can build on analyses performed by a peer authority or a third party (including international organisations such as the IAIS, IMF and World Bank);
- the results of horizontal reviews performed within a single jurisdiction can be beneficial to the supervisory community as a whole, especially as they may relate to systemic risk to the insurance sector. The supervisor may also consider suitable fora for the communication of information that is not necessarily insurance or insurer specific; and
horizontal reviews need not always be complex exercises. Simple horizontal outlier analysis on readily available insurer reports can often provide helpful supervisory insight. Simple analysis of some of these reports, including trends and peer comparisons, may help the supervisor to identify areas of potential risk and help it to target future work.

**Historic trends and current risk environment**

24.2.6 The supervisor should have in place an appropriate form of stress testing, which is applied to the insurance sector as a whole or to a significant sub-sample of insurers, selected according to the exposures to specific risks to be assessed. Outcomes of insurance sector and financial market analysis should be considered in the development of severe but still plausible scenarios to be tested in such exercises. Scenarios should reflect the current market environment and potential unfavourable evolutions in terms of changes in markets and insurance specific risk exposures. In order to contextualise the results, the supervisor should take into account the characteristics of the supervisory framework and the structure of the insurer’s assets and liabilities. Following a stress test exercise, the supervisor should discuss potential vulnerabilities and potential mitigating actions with the relevant insurers.

24.2.7 While many data items are backward looking, insurance sector analysis should be forward looking, to the extent possible, when developing scenarios to capture potential future developments. Stress scenarios should take into account ways that market dynamics have changed, which may make historical data less relevant.

24.2.8 The supervisor should use stress tests to identify vulnerabilities and risks and assess the impacts to the insurance sector and for individual insurers. Additionally, stress scenarios should be used to identify how those potential impacts may spread.

**Inward and outward risks**

24.2.9 When assessing both inward and outward risks, the supervisor should assess insurers’ exposures to liquidity risk, interconnectedness (macroeconomic and counterparty exposure), lack of substitutability and other risks. Assessing inward risks refers to the extent insurers may be exposed to, or vulnerable to, a certain risk within the insurance sector, whereas the outward risk refers to the situation in which these vulnerabilities would generate externalities which may then propagate to other financial markets or the real economy.

24.2.10 The supervisor should monitor the liquidity of an insurer’s invested assets relative to its insurance liabilities based on their characteristics. Additionally, the supervisor should analyse the potential that a large insurer’s operations could require it, or a sufficiently large number of insurers, to engage in asset sales of a significant size. The supervisor should assess the funding structure of insurers and their reliance on short term funding.

24.2.11 The supervisor should monitor interconnectedness with the financial system (for example, via intra-financial assets and liabilities or derivatives). As these exposures can be on a cross-jurisdictional and
cross-sectoral basis, the supervisor should cooperate with supervisors in other relevant jurisdictions and sectors.

24.2.12 Macroeconomic exposure in insurance liabilities depends on the characteristics of applicable investment guarantees as well as other contractual provisions and the complexity of the underlying risks. Monitoring of macroeconomic exposure should recognise the relationship between the assets and liabilities of the insurer. Stress tests can be used to support monitoring of this exposure.

Assessing systemic importance

24.3 The supervisor has an established process to assess the potential systemic importance of individual insurers and the insurance sector.

24.3.1 The supervisor should take a total balance sheet approach (see ICP 16 Enterprise Risk Management for Solvency Purposes) when considering the potential systemic importance of an insurer. When analysing systemic risk stemming from the insurance sector, the supervisor should at least consider common exposures and activities.

24.3.2 The supervisor should consider the type of policies underwritten by insurers and the activities insurers are engaged in, such as the degree of engagement in derivatives activity and reliance on short-term market activity. The supervisor should also consider the interconnectedness with other financial institutions, and the role of the insurance sector within the broader financial system.

24.3.3 As part of its assessment, the supervisor should consider emerging developments that may affect the insurance sector’s risk exposures. Additionally, the supervisor should cooperate and coordinate with other financial sector supervisors (such as banking, securities and pension supervisors, central banks and government ministries) to gain additional perspectives on the potential change in the risk exposures of insurers stemming from evolutions of other markets.

24.3.4 The supervisor should communicate the findings of its assessment as appropriate, to either individual insurers or the sector. The supervisor should require insurers to take action necessary to mitigate any particular vulnerabilities that have the potential to pose a threat to financial stability.

Supervisory response

24.4 The supervisor uses the results of its macroprudential supervision, and considers the potential systemic importance of insurers and the insurance sector, when developing and applying supervisory requirements.

24.4.1 A macroprudential perspective in the development and application of supervisory requirements may help limit the build-up of systemic risks and contribute to the resilience of the financial system. The supervisor should ensure that there is an appropriate interaction between its macroprudential analysis and assessment activities, on the one hand, and microprudential supervision, on the other hand.

24.4.2 As part of introducing supervisory requirements into its supervisory framework, the supervisor should consider implementing supervisory measures based on macroprudential concerns. Many macroprudential tools are, in effect, microprudential instruments developed or applied with
a macroprudential perspective in mind. By mitigating risk exposures, some measures that are intended to protect policyholders may also contribute to financial stability by decreasing the probability and magnitude of any negative systemic impact.

24.4.3 The supervisor should determine the depth and level of supervision based on its assessment of the systemic importance of individual insurers or the insurance sector (see ICP 9 Supervisory Review and Reporting). The supervisor should act to reduce systemic risk when identified within its jurisdiction through an appropriate supervisory response. In jurisdictions where one or more insurers have been assessed as systemically important, or a number of insurers are contributing to systemic risk, the supervisor should have supervisory requirements targeted at those insurers to mitigate systemic risk. The supervisor should extend certain requirements as necessary to an insurer and/or a number of insurers that it has assessed to be systemically important.

24.4.4 Specific supervisory responses may relate to:

- requirements on insurers:
  - enterprise risk management (see ICP 16 Enterprise Risk Management for Solvency Purposes);
  - disclosures (see ICP 20 Public Disclosure);
- preventive or corrective measures (see ICP 10 Preventive Measures, Corrective Measures and Sanctions); and
- crisis management and planning:
  - crisis management, including crisis management groups (see ICP 25 Supervisory Cooperation and Coordination); and
  - recovery and resolution planning (see ICP 12 Exit from the Market and Resolution and ICP 16 Enterprise Risk Management for Solvency Purposes).

24.4.5 Supervisory requirements may be intended to mitigate the potential spill-over effects from the distress or disorderly failure of an individual insurer or from the common exposures or behaviours of a group of insurers or across the sector. In the latter case, supervisory requirements may have different effects during different phases of the economic, underwriting or credit cycle. Therefore, the supervisor may develop requirements that are time-varying in nature, depending on the economic environment. The activation of such time-varying requirements could be rules-based (for example triggered automatically given a pre-defined condition) or discretionary (ie upon explicit decision by the supervisor). A rules-based approach may be more transparent but requires regular assessments of its adequacy under changing conditions affecting the insurance business.

**Transparency**

24.5 The supervisor publishes relevant data and statistics on the insurance sector.

24.5.1 The publication of data and statistics by the supervisor may enhance market efficiency by allowing market participants to make more informed
decisions and reducing the cost to the public of acquiring insurance sector information. Moreover, the publication of data may serve as a market disciplining mechanism by facilitating comparisons of an individual insurer to the sector as a whole.

24.5.2 The supervisor may provide access to sufficiently detailed data either by publishing data itself or by providing others with adequate means for publishing data. This could be achieved by engaging a government statistical office or cooperating with the local insurance sector; provided the supervisor is satisfied with the accuracy, completeness, frequency and timeliness of such publication.
25.0.1 Supervisors of the different insurance legal entities within an insurance

group with cross-border activities should coordinate and cooperate in the

supervision of the insurance group as a whole. Supervisors of different

insurance legal entities which are not part of the same group may also

need to cooperate and coordinate particularly where the insurers are

connected through reinsurance treaties or when difficulties in one insurer

may affect the market more generally, such as in resolution situations

(see ICP 12 Exit from the Market and Resolution).

25.0.2 Supervisors may draw upon several supervisory practices to facilitate

cross-border cooperation and coordination. These practices include the

identification of a group-wide supervisor and the use of coordination

arrangements, including supervisory colleges.

25.0.3 The group-wide supervisor is one of the involved supervisors and is

chosen to lead group-wide supervision of an insurance group. The

group-wide supervisor should facilitate and lead the cooperation and

coordination between the other involved supervisors and engage them

in the relevant supervisory decisions regarding the insurance group. The

group-wide supervisor is ultimately responsible for delivering effective

and efficient group-wide supervision. The other involved supervisors

should provide the group-wide supervisor with information regarding

insurance legal entities they supervise and otherwise participate in

group-wide supervision. The procedures for systematic or ad hoc

information exchange should be agreed with the other involved

supervisors. The sharing of information by the group-wide supervisor

and the other involved supervisors should be subject to confidentiality

requirements (see ICP 3 Information Sharing and Confidentiality

Requirements).

25.0.4 The undertaking of cooperation and coordination should not be taken to

imply joint decision making authority or any delegation of an individual

supervisor’s responsibilities. Supervisory decisions remain within the

responsibility of each of the involved supervisors.

Supervisory Recognition

25.0.5 Supervisors wishing to determine whether they can recognise and rely

upon another supervisory regime for the purpose of group-wide

supervision and designation of supervisory tasks should carry out an

assessment of the acceptability of the counterpart’s regime reflecting the

level or objective of supervisory recognition sought. Supervisors may use

different processes to conduct a supervisory recognition assessment.

The form of recognition and the criteria used for assessment will vary

depending on its purpose.
25.0.6 When the assessment has been finalised, the decision as to whether to recognize the supervisor should be communicated to the subject of the assessment. If recognition is not possible, the areas where the criteria were not met should be communicated and the supervisors should discuss how recognition may be achieved in future. A process for reassessment could then be established.

25.0.7 Following recognition, the supervisor should periodically assess whether a recognised supervisor continues to meet the criteria for recognition.

25.0.8 The terms of supervisory recognition, as well as specific roles and responsibilities, may be set out in unilateral statements, bilateral agreements, or multilateral agreements.

25.1 The supervisor discusses and agrees with the involved supervisors which of them is the group-wide supervisor for cross-border insurance groups operating in its jurisdiction.

25.1.1 In principle, the home supervisor of the head of the insurance group should be considered first to take the role of the group-wide supervisor in accordance with its authority and powers in its jurisdiction. In some jurisdictions, the legal or regulatory system may include provisions which allow or require the designation of a group-wide supervisor.

25.1.2 In case a different or several involved supervisors fulfil the conditions to be considered as a group-wide supervisor, factors to consider regarding the identification of a group-wide supervisor should include:

- the location of the insurance group's head office, given that this is where the group's Board and Senior Management is most likely to meet;
- where the registered head office is not the operational head of the insurance group, the location where:
  - the main business activities are undertaken;
  - the main business decisions are taken;
  - the main risks are underwritten; and/or
  - the largest balance sheet total is located; and
- the involved supervisors’ resources, skills, authorities and powers in their jurisdictions.

CF 25.1.a.1 When determining the group-wide supervisor of an IAIG, the involved supervisors should consider which supervisor would have direct powers over the Head of the IAIG (see ComFrame material under ICP 10 Preventive Measures, Corrective Measures and Sanctions).

25.2 As a group-wide supervisor, the supervisor:

- understands the structure and operations of the insurance group; and
- leads group-wide supervision, taking into account assessments made by the other involved supervisors.

Overall responsibilities of a group-wide supervisor
25.2.1 Once identified, the group-wide supervisor should be responsible for coordinating the input of insurance legal entity supervisors in undertaking group-wide supervision as a supplement to the existing insurance legal entity supervision.

25.2.2 Responsibilities of the group-wide supervisor should include:

- chairing of the supervisory college (where one exists), or consider establishing one if not in place yet;
- determination of the scope of group supervision;
- leadership, planning and coordination of group-wide supervisory activities;
- aggregation of group-wide information and dissemination of the relevant information to the other involved supervisors;
- preparation and discussion of group-wide supervisory analysis;
- performing a group-wide supervisory assessment, including assessing group capital management, risk and solvency, risk concentration, intragroup transactions and group governance;
- coordination of information sharing procedures amongst other involved supervisors;
- decision making on group-wide issues in consultation with other involved supervisors, where relevant;
- implementation and coordination of decisions on group-wide issues including preventive and corrective measures and sanctions; and
- identification of gaps in supervision.

25.2.3 The group-wide supervisor should take the initiative in coordinating the roles and responsibilities of, and facilitating communication between, the other involved supervisors. In carrying out its agreed functions, the group-wide supervisor should strive to act with the consensus of the other involved supervisors.

*Information sharing and key contact point function*

25.2.4 The group-wide supervisor should request information from other involved supervisors needed to fulfil its role.

25.2.5 The group-wide supervisor should make relevant information available to the other involved supervisors on a proactive basis and in a timely manner.

25.2.6 The group-wide supervisor functions as a key contact point for all other involved supervisors.

25.3 As an other involved supervisor, the supervisor understands:

- the structure and operations of the group insofar as it concerns the insurance legal entities in its jurisdiction; and
• the way that operations of insurance legal entities of the group in its jurisdiction may affect the rest of the group.

Responsibilities

25.3.1 Responsibilities of other involved supervisors should include:

• actively participating in the group supervision process, such as that facilitated by a supervisory college;
• informing the group-wide supervisor and, if necessary, other involved supervisors, of material findings affecting their insurance legal entity that could affect entities in other jurisdictions;
• sharing all relevant information with the group-wide supervisor to assist with supervision at the group-wide level and discussing findings and concerns at the group level with the group-wide supervisor;
• analysing information received from the group-wide supervisor;
• cooperating in the analysis and decision making as well as implementation and enforcement;
• assisting the group-wide supervisor in carrying out the supervisory process at the group level; and
• identifying gaps in supervision.

Information sharing

25.3.2 Other involved supervisors should provide the group-wide supervisor with relevant information, regarding insurance legal entities within the insurance group, including:

• any granting and withdrawal of a licence;
• location of significant business;
• developments in the legal structure of the insurance group;
• changes in business model;
• changes to the Board or Senior Management;
• changes in the systems of risk management and internal controls;
• significant developments or material changes in the business operations;
• significant developments in the financial position and regulatory capital adequacy;
• significant investments in group legal entities;
• significant financial links;
• the transfer of risks to and from non-regulated legal entities;
• operational risk as well as conduct risk, including mis-selling claims and fraud;

• potential high-risk factors for contagion; and

• events which may endanger the viability of the insurance group or major legal entities belonging to the insurance group.

25.3.3 Other involved supervisors should request information in relation to the group for a timely assessment of an insurance legal entity located in its jurisdiction.

25.4 The group-wide supervisor discusses and agrees with other involved supervisors to establish suitable coordination arrangements for cross-border insurance groups operating in its jurisdiction.

25.4.1 Coordination arrangements, including supervisory colleges, are mechanisms to foster cooperation and coordination between involved supervisors with regard to the supervision of insurance groups, as well as to promote common understanding, communication and information exchange.

25.4.2 The group-wide supervisor should initiate discussions with other involved supervisors about suitable coordination arrangements. Involved supervisors should seek a consensus on the most appropriate form of coordination arrangements.

25.5 The group-wide supervisor sets out the coordination arrangements in a written coordination agreement and puts such arrangements in place.

25.5.1 The scope of coordination arrangements will vary and should reflect the circumstances of the particular insurance group and involved supervisors.

25.5.2 A written coordination agreement should cover activities including:

• information flows between involved supervisors;

• communication with the head of the group;

• convening periodic meetings of involved supervisors;

• the conduct of a comprehensive assessment of the group, including the objectives and process used for such an assessment; and

• supervisory cooperation during a crisis.

25.6 The supervisor discusses and agrees with involved supervisors whether to establish a supervisory college for cross-border insurance groups operating in its jurisdiction, and if so, how to structure and operate the supervisory college.

Establishing a supervisory college

25.6.1 The group-wide supervisor, in cooperation and coordination with other involved supervisors, should consider establishing a supervisory college where, for instance:
• the nature, scale and complexity of the cross-border activities or intra-group transactions are significant and associated risks are high;
• group activities or their cessation could have an impact on the overall stability of the insurance markets in which the insurer operates; and
• the insurance group has significant market share in more than one jurisdiction (see Application Paper on Supervisory Colleges).

Structure and membership of a supervisory college

25.6.2 The group-wide supervisor, in cooperation and coordination with the involved supervisors, should carefully consider the structure of the supervisory college (for example, inclusive, tiered, or regional).

25.6.3 A supervisory college is typically comprised of representatives of each of the supervisors responsible for the day-to-day supervision of the insurance legal entities, including material or relevant branches, which are part of the group and, as appropriate, any supervisors of other material non-insurance entities.

25.6.4 Clear criteria should be established for defining the basis of membership in the supervisory college. Issues which should be considered in establishing these criteria include:

• the relative size and materiality of the insurance legal entity relative to the insurance group as a whole;
• the relative size or materiality of the insurance legal entity relative to its local market;
• the level of risk in a particular insurance legal entity.

25.6.5 The structure of and membership in the supervisory college should be reviewed on a regular basis to reflect changing circumstances in the insurance group.

Coordination agreement for a supervisory college

25.6.6 The purpose of a supervisory college coordination agreement is to establish a framework for the operations of a supervisory college. The agreement is not legally binding and does not create enforceable obligations from one supervisor to another. However, jurisdictions may be subject to an obligation to establish such an agreement.

25.6.7 While recognising the need to allow for flexibility in the operation of a supervisory college, matters covered by the coordination agreement generally should include:

• membership of the supervisory college – including the approach to participation of members in the college;
• the process for appointing a supervisor to chair the college (typically, but not necessarily, the group-wide supervisor);
- roles and functions of the supervisory college and of the members of the supervisory college, including expectations of the chair;
- frequency and locations of meetings (meetings should take place by telephone conference call or other means where an in-person meeting is not practical); and
- scope of the activities of the supervisory college, including ongoing information exchange.

25.6.8 Members of a supervisory college who are not signatories to the IAIS MMoU should enter into a similar long-term agreement covering information exchange and confidentiality, which could be included in the college coordination agreement.

Functions and activities of a supervisory college

25.6.9 The group-wide supervisor, in cooperation and coordination with the other involved supervisors, should establish the appropriate ongoing functions of the supervisory college and clearly allocate those functions among the involved supervisors to avoid unnecessary duplication of supervisory tasks and to ensure no gaps exist in the supervision of the group.

25.6.10 In establishing the functions of a supervisory college, the key activities which should be considered include:
- providing access for involved supervisors to information and knowledge about the group and the environment in which it operates through information sharing;
- assessing group-wide risk exposures, financial position and regulatory capital adequacy and the group-wide corporate governance framework, including risk management, internal control and intra-group relationships such as intra-group transactions and exposures;
- understanding the material operations, solvency and liquidity needs of the material legal entities within the group;
- coordinating supervisory activities such as joint off-site monitoring or on-site inspections or review of one or more entities within the group or of a particular aspect of the group’s functions such as internal audit, actuarial, risk management or compliance;
- coordinating appropriate actions to ensure that the group and relevant entities within the group mitigate identified risks;
- forming special focus teams to evaluate areas of particular concern or importance to the involved supervisors, or to bring together the requisite expertise to examine an aspect of the group’s operations;
- providing a forum for involved supervisors to interact with the insurer’s group-wide Senior Management in order to, for example, inform Senior Management of an identified issue at
an insurance legal entity that affects the whole insurance
group; and

• regularly assessing the effectiveness of the supervisory
college in fulfilling its agreed role and functions. The
assessment should be organised by the group-wide
supervisor and take into account input from the other involved
supervisors and, as appropriate, legal entities.

25.6.11 Aside from group-wide issues, supervisory colleges may also focus on
issues specific to insurance legal entities within the insurance group.

| CF 25.6.a | The group-wide supervisor establishes a supervisory college for the IAIG,
which meets at least annually. |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CF 25.6.a.1</td>
<td>If a supervisory college does not already exist, one should be formed and its first meeting should take place in a timely manner after the identification of the IAIG.</td>
</tr>
</tbody>
</table>
| CF 25.6.a.2 | Priorities for the initial supervisory college meeting should include, at least:
• confirming the group-wide supervisor and the structure of the supervisory college;
• describing the scope of group-wide supervision including, where applicable, an explanation from the group-wide supervisor of its decision to exclude an entity from the scope of group supervision; and
• discussing proposed coordination agreements. |
| CF 25.6.a.3 | When an in-person meeting is not practicable, the meeting should take place by teleconference or other means. |
| CF 25.6.a.4 | The group-wide supervisor should ensure that the IAIG’s supervisory college discusses the most relevant elements of the group-wide supervisory process and the supervisory plan. The agenda set by the group-wide supervisor should provide for discussion of at least the IAIG’s:
• group-wide corporate governance framework;
• enterprise risk management;
• main risks and intra-group transactions;
• financial position; and
• regulatory capital adequacy and compliance with supervisory requirements. |
| CF 25.6.a.5 | When deciding on the topics to be covered in the IAIG’s supervisory college meetings, the group-wide supervisor should cooperate and coordinate with involved supervisors to ensure that matters pertinent at a legal entity level are appropriately raised. |

| CF 25.6.b | The members of the IAIG’s supervisory college communicate and exchange information on an ongoing basis. |
CF 25.6.c  The members of the IAIG’s supervisory college discuss and assess a summary of the reference ICS prepared by the group-wide supervisor, as well as a summary of any additional reporting related to the ICS that has been reported at the option of the group-wide supervisor.

CF 25.6.c.1  The assessment of the reference ICS and, if applicable, any additional reporting should include:

- a comparison with existing group capital standards or calculations that are in development;
- the extent to which material risks of the IAIG are captured;
- the appropriateness and practicality of the calculations required; and
- any difficulties in implementing the measure by the IAIG.

CF 25.6.c.2  The purpose of the supervisory college discussing and assessing the summary of the reference ICS, and of any additional reporting, is to help refine the ICS.

Supervisory cooperation in planning for crisis management

25.7  The group-wide supervisor coordinates crisis management preparations with other involved supervisors and relevant authorities.

Objectives of crisis preparation planning

25.7.1  The main objectives of supervisory crisis management planning should be:

- to protect policyholders; and
- to contribute to domestic or international financial stability to avoid a potential adverse impact on the real economy.

25.7.2  In planning for crisis management the group-wide supervisor and other involved supervisors should seek to:

- promote private sector solutions such as portfolio transfers and run-offs;
- minimise the need to use public support to protect policyholders;
- minimise disruptions to the efficient operation of the insurance sector across jurisdictions; and
- achieve an orderly supervisory response.

Process for crisis management planning

25.7.3  Supervisory actions in planning for crisis management should seek to secure early communication between involved supervisors and relevant authorities in order to maximise time for coordination and cooperation.

25.7.4  The group-wide supervisor should meet regularly with the other involved supervisors and relevant authorities to share and evaluate information relating to the insurance group and to analyse and assess specific issues (including whether there are systemic implications). These meetings may
be held in conjunction with the supervisory college meetings or separately if no supervisory college is in place.

25.7.5 Supervisors should remain aware of potential contagion channels, conflicts of interest and possible barriers to coordinated action in a crisis situation within a specific cross-border insurance group (such as legally required transparency rules in the case of publicly listed companies or particular legislative requirements across jurisdictions).

25.7.6 Effective crisis management should ensure that preparations for and management of a cross-border crisis – including policy measures, crisis response decisions and matters of external communication – are coordinated, timely and consistent. Supervisors and other relevant authorities (e.g., ministries of finance, central banks, other financial sector supervisors and policyholder protection schemes) should exchange information to facilitate effective crisis management.

25.7.7 The group-wide supervisor should share with the other involved supervisors and relevant authorities information relevant to crisis management, including:

- group structure (focusing on legal, financial and operational intragroup dependencies, which may not be always available to the other authorities);
- inter-linkages between the insurance group and the financial system in each jurisdiction where it operates; and
- potential impediments to a coordinated solution to a crisis.

25.7.8 A supervisory college should plan in advance the process for cooperation and coordination during crisis situations in order to benefit from well-established information and cooperation channels and procedures should a crisis occur. The channels for communication with the head of the group, as well as other parts of the group, should be clearly established in case a crisis emerges. The group-wide supervisor should establish close communication channels with the group Board and Senior Management as well as Significant Owners.

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**CF 25.7.a** The group-wide supervisor establishes a crisis management group for the IAIG with the objective of enhancing preparedness for, and facilitating the recovery and resolution of, the IAIG.

**CF 25.7.a.1** A crisis management group may be established under a different name so long as it fulfils the objectives of a crisis management group for the IAIG (IAIG CMG).

**CF 25.7.a.2** There should be clear conditions as to the membership of the IAIG CMG. Membership of the IAIG CMG should include:

- the group-wide supervisor;
- the other relevant involved supervisors; and
- to the extent possible, relevant resolution authorities.

**CF 25.7.a.3** The supervisory college may qualify as an IAIG CMG if:
• the supervisory college’s coordination arrangements address recovery and resolution; and
• membership includes those authorities which would otherwise be members of the IAIG CMG.

CF 25.7.a.4 The IAIG CMG should keep under active review the:
• progress in coordination and information sharing within the IAIG CMG and with host resolution authorities that are not represented in the IAIG CMG;
• processes for recovery planning and resolution planning (where required) for the IAIG; and
• resolvability of the IAIG.

CF 25.7.b The group-wide supervisor puts in place a written coordination agreement between the members of the IAIG CMG.

CF 25.7.b.1 The coordination agreement should describe, at least:
• roles and responsibilities of the respective members of the IAIG CMG; and
• the process for coordination and cooperation, including information sharing, among members of the IAIG CMG.

CF 25.7.b.2 The coordination agreement may take the form of a memorandum of understanding.

**Supervisory cooperation during a crisis**

25.8 The supervisor:

• Informs the involved supervisors as soon as it becomes aware of a crisis;
• cooperates and coordinates with the involved supervisors and relevant authorities to analyse and assess the crisis situation and its implications to reach a common understanding of the situation; and
• identifies coordinated, timely and effective solutions to a crisis situation.

25.8.1 The group-wide supervisor should coordinate the gathering and analysis of information, as well as coordinate supervisory activities to respond to the crisis.

25.8.2 Such analysis should include:

• implications for policyholder protection in each relevant jurisdiction;
• whether the crisis is of systemic relevance and, if so, the identification of possible sources of systemic risk; and
• processes through which involved supervisors and relevant authorities can respond in a coordinated way.
25.8.3 Such cooperation and coordination takes account of the impact of the crisis on policyholders, financial systems and real economies of all relevant jurisdictions, drawing on information, arrangements and crisis management plans developed beforehand.

25.9 The group-wide supervisor coordinates with other involved supervisors and relevant authorities on public communication and communication with the insurance group during the crisis.

25.9.1 The group-wide supervisor and other involved supervisors, where practicable, share their plans for public communication among themselves and with other authorities to ensure that communication is handled in a coordinated and timely way.

25.9.2 The group-wide supervisor considers when, and to what extent, to communicate with the insurance group and the insurance legal entities that are part of the group, through their respective insurance legal entity supervisors.

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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 principal-agent 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.


Keywords: insurance regulation; market failures; Solvency II

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.¹² 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. 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. These market failures are judged against the social welfare maximising conditions for perfect competition. Perfect competition requires numerous buyers and sellers in a

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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 \textit{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 \url{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

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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. 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.

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. 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

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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. 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. 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. 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. Further, profits in both the life and non-life sectors in the

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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).


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.”
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

Table 1  Property-casualty insurance market structure in the United States: 2006

<table>
<thead>
<tr>
<th>Line</th>
<th>Number of insurers</th>
<th>Pct. of sector DPW (%)</th>
<th>CR10 (%)</th>
<th>HHI</th>
<th>Since 1997 Entries (%)</th>
<th>Exits (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal auto</td>
<td>389</td>
<td>33.2</td>
<td>64.1</td>
<td>651</td>
<td>29.4</td>
<td>48.9</td>
</tr>
<tr>
<td>Commercial auto</td>
<td>389</td>
<td>6.2</td>
<td>44.4</td>
<td>272</td>
<td>33.4</td>
<td>46.2</td>
</tr>
<tr>
<td>Homeowners</td>
<td>438</td>
<td>12.3</td>
<td>64.2</td>
<td>784</td>
<td>27.9</td>
<td>41.2</td>
</tr>
<tr>
<td>Fire &amp; allied</td>
<td>544</td>
<td>4.2</td>
<td>53.7</td>
<td>502</td>
<td>24.8</td>
<td>41.6</td>
</tr>
<tr>
<td>Commercial MP</td>
<td>365</td>
<td>7.4</td>
<td>49.0</td>
<td>318</td>
<td>24.1</td>
<td>45.6</td>
</tr>
<tr>
<td>General liability</td>
<td>697</td>
<td>12.2</td>
<td>57.7</td>
<td>595</td>
<td>36.8</td>
<td>42.8</td>
</tr>
<tr>
<td>Medical malpractice</td>
<td>225</td>
<td>2.5</td>
<td>45.8</td>
<td>295</td>
<td>112.4</td>
<td>57.2</td>
</tr>
<tr>
<td>Workers’ compensation</td>
<td>312</td>
<td>9.5</td>
<td>54.2</td>
<td>487</td>
<td>32.1</td>
<td>48.0</td>
</tr>
<tr>
<td>Other</td>
<td>715</td>
<td>20.0</td>
<td>43.1</td>
<td>255</td>
<td>26.2</td>
<td>45.8</td>
</tr>
<tr>
<td>All lines Combined</td>
<td>1,270</td>
<td>100.0</td>
<td>48.6</td>
<td>318</td>
<td>43.5</td>
<td>43.4</td>
</tr>
</tbody>
</table>

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.
insurance rates have not uncovered significant benefits to consumers from such
regulation.  

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. 

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. 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. 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.

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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 under-
scores 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. 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. 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. 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.

In these countries, solvency regulation is handled at the national level and market conduct regulation is delegated to the states or provinces.


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.
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. 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. 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.

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/.
26 See Eling et al. (2007) and Elderfield (2009) for a more 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

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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”.
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. In addition, accounting values can either be erroneous or manipulated to obtain more favourable regulatory assessments. For example, Cummins et al. 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. 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 expense-recovery 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 insurer 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.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

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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 property-liability 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 insurer’s financial condition and the management of its financial risk. 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. 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.\textsuperscript{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 \textit{et al.}\textsuperscript{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.\textsuperscript{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

\textsuperscript{39} Cummins \textit{et al.} (1999).
\textsuperscript{40} Pottier and Sommer (2002).
\textsuperscript{41} See Vaughan (2009) for more discussion of this initiative.
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, reorganizing 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.

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\(^42\) 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. 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 Schacht discuss the problems with the current system and suggest a more effective and efficient approach to market conduct monitoring that would maximise

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43 Dionne (2001).
44 Klein and Schacht (2001).
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-existant.

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 of 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 conduct 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.

References


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Government-sponsored Natural Disaster Insurance Pools: A view from down-under

Article in International Journal of Disaster Risk Reduction - December 2015
DOI: 10.1016/j.ijdrr.2015.11.004

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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 [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

<table>
<thead>
<tr>
<th>Rank</th>
<th>Year</th>
<th>Event</th>
<th>Cost (Millions AUD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1999</td>
<td>Sydney Hailstorm</td>
<td>4475</td>
</tr>
<tr>
<td>2</td>
<td>1974</td>
<td>Tropical Cyclone Tracy</td>
<td>4178</td>
</tr>
<tr>
<td>3</td>
<td>1989</td>
<td>Newcastle Earthquake</td>
<td>3834</td>
</tr>
<tr>
<td>4</td>
<td>1974</td>
<td>Brisbane Floods</td>
<td>2701</td>
</tr>
<tr>
<td>5</td>
<td>2011</td>
<td>Queensland and Victorian Floods</td>
<td>2506</td>
</tr>
<tr>
<td>6</td>
<td>1983</td>
<td>Ash Wednesday Bushfires (Wildfires)</td>
<td>2371</td>
</tr>
<tr>
<td>7</td>
<td>1985</td>
<td>Brisbane Hailstorm</td>
<td>2046</td>
</tr>
<tr>
<td>8</td>
<td>2007</td>
<td>Pasha Bulker East Coast Low Storm</td>
<td>1966</td>
</tr>
<tr>
<td>9</td>
<td>1973</td>
<td>Tropical Cyclone Madge</td>
<td>1520</td>
</tr>
<tr>
<td>10</td>
<td>1999</td>
<td>Sydney Hailstorm</td>
<td>1433</td>
</tr>
</tbody>
</table>

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-for-profit, 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 landslide, 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% fee.

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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 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 SN$240 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 €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-for-profit 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 25-year 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-formuleren-over-overstromingsrisico), the Netherlands faces an existential threat from flooding. Combating this threat is taken as a government responsibility. In response to the 1953 disaster 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 equalising 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 rate-making 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 risk-based. 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://rogerpilkeljr.blogspot.com.au/2014/06/the-us-hurricane-drought-in-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
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 hurricane.

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.dropboxusercontent.com/u/53088391/Actuarial%20and%20Underwriting%20Meeting%20TWIA-Axurial%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

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. 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 [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. 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 discounts on insurance rates if the community participates in an incentive program, the Community Rating System, and if local government commits to prescribed mitigation and land-use planning guidelines. Of the government pools considered, NFIP and TWIA are the only ones that explicitly undertake mitigation on behalf of the nation.

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 Ike 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 buildings [7]. In 2014, political reaction to the reforms led to the Homeowner Flood Insurance Affordability Act reversing many of Biggert-Waters’ amendments, an
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 200-years) 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 two years [http://insurancenews.com.au/local/suncorp-quits-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 wind-resilient 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.ministers.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 socio-economic 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
8


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.

Acknowledgements
The authors acknowledge advice and insights on particular
insurance pools from Drs Kevin Roche (Risk Frontiers), Laurens
Bouwer (Deltares), Bas Jonkman (Delft University of Technology),
Hugh Cowan (EQC) as well as Juan Satrústegui, Javier Lozano and
Jesús Galeote (MapFre), Belén Soriano (CCS), Matt Cullen (Association of British Insurers) and Debbie Moses and Emeritus Prof.
Russell Blong (Aon Benﬁeld). This work was in part supported by a
grant from the Australian National Climate Change Adaptation
Research Facility.

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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
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.htm), 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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CIPR Homepage (/cipr_home.htm)
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.
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 aggrivated 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 practitioners’ 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 Austria, 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 induced 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:


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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
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<td>Australian Accounting Standards Board</td>
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<td>BEL</td>
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<td>CTV</td>
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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 supervision 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.

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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 approach 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

1. 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.

7. 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.

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⁴ https://treasury.govt.nz/information-and-services/regulation/regulatory-stewardship
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 \( X \)th 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 “Capital Review – Decisions 2019”
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 classes 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.

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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.\(^5\)
- 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:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sector-differentiated status quo – separate Life and Non-Life Standards</td>
<td>Least cost for industry as would not require the industry to change its calculation methodologies.</td>
<td>Potential inconsistencies and more complex upgrade path.</td>
</tr>
<tr>
<td>2</td>
<td>Single solvency framework covering all sectors and subsectors</td>
<td>Streamlined approach and less potential for inconsistency.</td>
<td>Higher cost to industry as industry would be required to make significant changes to their calculation methodologies.</td>
</tr>
</tbody>
</table>

\(^5\) Paragraphs 41-44 of the non-life standard
Risk that sector-specific risks may not be accurately captured.

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<table>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Rationalisation – folding the variable annuity standard into the life standard, and the three non-life standards into a single document</td>
<td>Would address some of the issues listed above relating to inconsistency, while still explicitly allowing for sector-specific differences.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Potentially minor costs to affected insurers.</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>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.</td>
<td>No disruption to insurers.</td>
<td>Minimum assets determined at the current level may not be sufficient to resolve all blocks of business for an insurer in distress.</td>
</tr>
<tr>
<td>2</td>
<td>All business allocated to ‘insurance funds’. Solvency requirements are only applied at the insurer level, although these requirements will be a function of fund solvency.</td>
<td>Facilitates resolution of all blocks of business.</td>
<td>May result in increased costs (administrative and capital) for insurers.</td>
</tr>
</tbody>
</table>

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?

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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:

<table>
<thead>
<tr>
<th>Balance Sheet Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Accounting Balance Sheet</strong></td>
<td>Balance sheet used for financial reporting purposes. Assets and liabilities on the balance sheet are valued on a Generally Accepted Accounting Principles (“GAAP”) basis.</td>
</tr>
<tr>
<td><strong>Solvency Balance Sheet</strong></td>
<td>Balance sheet used as the starting point for solvency calculations. This is before the application of any stresses. This balance sheet will be used as the base case for solvency stresses.</td>
</tr>
<tr>
<td><strong>Stressed Balance Sheet</strong></td>
<td>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.</td>
</tr>
</tbody>
</table>

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.

53. New Zealand’s solvency standards are currently mostly based on the NZ GAAP balance sheet. 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 consultation paper.

15With 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. ICP 14 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.
<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
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<tbody>
<tr>
<td>Option 1:</td>
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<tr>
<td>Status Quo</td>
<td>Continue to require IFRS 4 for solvency purposes, even after transition to</td>
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<td></td>
<td>IFRS 17, with no changes to the solvency standard.</td>
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<tr>
<td></td>
<td>• Low implementation cost for us</td>
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<td></td>
<td>• No (upwards or downwards) spike in solvency ratios after transition, and</td>
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<tr>
<td></td>
<td>hence easier for the public to understand</td>
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<td></td>
<td>• Burden on industry to maintain both reporting requirements, especially</td>
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<td></td>
<td>for life insurers.</td>
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<td></td>
<td>• Not robust and difficult to maintain through future generations of</td>
</tr>
<tr>
<td></td>
<td>accounting changes.</td>
</tr>
<tr>
<td>Option 2:</td>
<td></td>
</tr>
<tr>
<td>GAAP</td>
<td>Continue to use the GAAP balance sheet after transition to IFRS 17, and</td>
</tr>
<tr>
<td></td>
<td>make no further changes to the solvency standard.</td>
</tr>
<tr>
<td></td>
<td>• Lower implementation cost for us and insurers</td>
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<tr>
<td></td>
<td>• Flexibility for insurers to choose what works for them (through</td>
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<tr>
<td></td>
<td>judgements under IFRS 17)</td>
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<tr>
<td></td>
<td>• Easy to reconcile to accounts</td>
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<td></td>
<td>• As IFRS 17 is an international standard, basing our solvency standards</td>
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<td>on IFRS 17 makes it more easily understandable and easily accessible for</td>
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<td>an overseas entity</td>
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<td></td>
<td>• Obscures true financial strength as IFRS 17 is open to judgement, so</td>
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<td></td>
<td>insurers with otherwise identical risks could end up with very different</td>
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<td></td>
<td>solvency positions.</td>
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<td>• Insurers' true financial strength will be disguised by the choice of</td>
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<td></td>
<td>method and assumptions.</td>
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<td></td>
<td>• Doesn't provide a consistent basis to implement a ladder of intervention</td>
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<tr>
<td></td>
<td>approach as the solvency ratio may mean different things for different</td>
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<td></td>
<td>insurers.</td>
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<tr>
<td></td>
<td>• Even if there was consistency in valuation method across the whole</td>
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<td></td>
<td>industry, various IFRS 17 allowable approaches may not be appropriate</td>
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<td></td>
<td>for solvency purposes.</td>
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<tr>
<td>Option 3:</td>
<td></td>
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<tr>
<td>GAAP with</td>
<td></td>
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<tr>
<td>adjustments</td>
<td>Allow insurers flexibility of choice regarding insurance liability</td>
</tr>
<tr>
<td></td>
<td>valuation method under IFRS 17, but specify parameters to use</td>
</tr>
<tr>
<td></td>
<td>• Least implementation cost for insurers as they can leverage off their</td>
</tr>
<tr>
<td></td>
<td>IFRS 17 implementation</td>
</tr>
<tr>
<td></td>
<td>• As IFRS 17 is an international standard, our solvency standards will be</td>
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<td></td>
<td>more easily understandable to overseas regulators and insurers (less</td>
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<td></td>
<td>barrier to entry)</td>
</tr>
<tr>
<td></td>
<td>• Insurers may select the valuation method that works best for them (in</td>
</tr>
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<td></td>
<td>terms of management and systems), and not necessarily have solvency in</td>
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<tr>
<td></td>
<td>mind when selecting the valuation method. This may mean the valuation</td>
</tr>
<tr>
<td></td>
<td>method selected by the insurer does not reflect the economic value of</td>
</tr>
<tr>
<td></td>
<td>the product.</td>
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<tr>
<td></td>
<td>• Difficult to ensure consistency and comparability across industry as</td>
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<td></td>
<td>different insurers may treat the same product differently</td>
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</tbody>
</table>

16 Especially when dealing with onerous contracts, risk adjustments and the contractual service margin
<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Advantages</th>
<th>Disadvantages</th>
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</thead>
</table>
| **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 as well as regulatory 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. |
Note that Options 3b, 3c and 4 are each examples of the standardised balance sheet approach.

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.

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

While the previous sub-section discussed technical insurance items, this sub-section will focus on non-technical 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.

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.

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.

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.

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.

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.

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.

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 17, so any changes resulting from IFRS 9 may also need to be taken into account.

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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.
### Assets

- 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
- Deferred tax liabilities
- Other liabilities

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74. The items highlighted in dark grey are technical insurance liabilities and were discussed in the previous sub-section. 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.

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\(^{18}\) 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.\(^\text{19}\) 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.

![Diagram showing the comparison between today's and IFRS 17's treatment of insurance and reinsurance assets and liabilities.]

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:

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\(^\text{19}\) 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.

88. The treatment of insurance payables and receivables is not independent of the treatment of technical provisions, as shown below:

<table>
<thead>
<tr>
<th>Options for valuing technical provisions</th>
<th>Treatment of insurance payables and receivables</th>
</tr>
</thead>
<tbody>
<tr>
<td>3a: Allow insurers choice of valuation method under IFRS 17, but prescribe valuation parameters</td>
<td>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.</td>
</tr>
<tr>
<td>3b: Specify which IFRS 17 valuation method and parameters</td>
<td>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.</td>
</tr>
<tr>
<td>3c: Specify non-IFRS 17 valuation method</td>
<td></td>
</tr>
<tr>
<td>4: Regulatory balance sheet</td>
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</tbody>
</table>
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

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.

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 review of the CBL liquidation process, echoed these recommendations. In particular, the binary approach to solvency (with over 100% - or an alternative 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 APRA-regulated 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:

<table>
<thead>
<tr>
<th>Value-at-Risk (VaR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
</tr>
<tr>
<td><strong>Pros</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Cons</strong></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Scenario-based</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
</tr>
<tr>
<td><strong>Pros</strong></td>
</tr>
</tbody>
</table>
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.

---

**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.

<table>
<thead>
<tr>
<th>Measure</th>
<th>VaR</th>
<th>Scenarios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solvency ratio</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Assets over stressed liabilities</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Probability of failure</td>
<td>✓</td>
<td>✗</td>
</tr>
</tbody>
</table>

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 ourselves (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. 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.

![Diagram showing solvency calculations with and without capital charges](image)

**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. 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?
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. 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

\[
\text{Compound Capital Charge} = \sqrt{\sum_{ij} \text{Correlation}_{ij} \times \text{Capital Charge}_i \times \text{Capital Charge}_j}
\]

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. 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.

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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 liability\(^{25}\) 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.

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\(^{25}\) 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.

```
<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profitable</td>
<td>Group 1P</td>
<td>Group 2P</td>
<td>Group 3P</td>
</tr>
<tr>
<td>Onerous</td>
<td>Group 1O</td>
<td>Group 2O</td>
<td>Group 3O</td>
</tr>
<tr>
<td>Marginal</td>
<td>Group 1M</td>
<td>Group 2M</td>
<td>Group 3M</td>
</tr>
</tbody>
</table>
```

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 determining and reporting profit over time. This focus may not be suitable for regulatory purposes.\(^{28}\)

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\(^{28}\) IFRS 17 BC.15, BC.119
<table>
<thead>
<tr>
<th>Grouping option</th>
<th>Possible theoretical basis</th>
<th>Impact on capital requirement</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
</table>
| 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 - insurancesolvency@rbnz.govt.nz - 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:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sector-differentiated status quo – separate Life and Non-Life Standards</td>
<td>Least cost for industry as would not require the industry to change its calculation methodologies.</td>
<td>Potential inconsistencies and more complex upgrade path.</td>
</tr>
<tr>
<td>2</td>
<td>Single solvency framework covering all sectors and subsectors</td>
<td>Streamlined approach and less potential for inconsistency.</td>
<td>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.</td>
</tr>
<tr>
<td>3</td>
<td>Rationalisation – folding the variable annuity standard into the life standard, and the three non-life standards into a single document</td>
<td>Would address some of the issues listed above relating to inconsistency, while still explicitly allowing for sector-specific differences.</td>
<td>Potentially minor costs to affected insurers.</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>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.</td>
<td>No disruption to insurers.</td>
<td>Minimum assets determined at the current level may not be sufficient to resolve all blocks of business for an insurer in distress.</td>
</tr>
<tr>
<td>2</td>
<td>All business allocated to ‘insurance funds’. Solvency requirements are only applied at the insurer level, although these requirements will be a function of fund solvency.</td>
<td>Facilitates resolution of all blocks of business.</td>
<td>May result in increased costs (administrative and capital) for insurers.</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Option</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Status Quo</td>
<td>Continue to require NZ IFRS 4 for solvency purposes</td>
</tr>
<tr>
<td>2</td>
<td>GAAP</td>
<td>Continue to use the GAAP balance sheet after transition to IFRS 17, and make no changes to the solvency standard.</td>
</tr>
<tr>
<td>3</td>
<td>GAAP with adjustments</td>
<td>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.</td>
</tr>
<tr>
<td>4</td>
<td>Full regulatory balance sheet</td>
<td>Ignore GAAP entirely and specify a separate set of regulatory reporting requirements.</td>
</tr>
</tbody>
</table>

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.
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>R.</td>
<td>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?</td>
</tr>
<tr>
<td>S.</td>
<td>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?</td>
</tr>
<tr>
<td>T.</td>
<td>How do insurers currently measure insurance receivables and payables (premium and reinsurance recovery receivables, claims payable)?</td>
</tr>
<tr>
<td>U.</td>
<td>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?</td>
</tr>
<tr>
<td>V.</td>
<td>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?</td>
</tr>
<tr>
<td>W.</td>
<td>How are the tax items on the balance sheet likely to be impacted by IFRS 17 (and IFRS 9)?</td>
</tr>
<tr>
<td>X.</td>
<td>Will there be any flow on impacts of tax impacts on other insurance and non-insurance items on the balance sheet?</td>
</tr>
<tr>
<td>Y.</td>
<td>Should we implement a ladder of intervention approach to solvency? Please give your reasons.</td>
</tr>
<tr>
<td>Z.</td>
<td>At what point should the insurer’s operations be considered to no longer be viable?</td>
</tr>
<tr>
<td>AA.</td>
<td>Conversely, what point in an insurer’s solvency level triggers the need to start increasing the intensity of supervisory intervention from BAU supervision?</td>
</tr>
<tr>
<td>BB.</td>
<td>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.</td>
</tr>
<tr>
<td>CC.</td>
<td>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?</td>
</tr>
<tr>
<td>DD.</td>
<td>What approach would strike the right balance between clarity and discretion when setting out supervisory responses at different levels of the ladder of intervention?</td>
</tr>
<tr>
<td>EE.</td>
<td>What should our risk appetite be in relation to insurer failure?</td>
</tr>
<tr>
<td>FF.</td>
<td>Would you be comfortable with handling some deductions from capital through the Resilience Risk Capital Charge? Why or why not?</td>
</tr>
<tr>
<td>GG.</td>
<td>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?</td>
</tr>
<tr>
<td>HH.</td>
<td>Is it appropriate for us to adjust insurer solvency calculations?</td>
</tr>
<tr>
<td>II.</td>
<td>Does the list in paragraph 140 cover all circumstances where solvency calculations should be adjusted?</td>
</tr>
<tr>
<td>JJ.</td>
<td>Do you support introducing supervisory adjustments as an integral part of the determination of capital requirements?</td>
</tr>
<tr>
<td>KK.</td>
<td>Are there other forms (other than fixed amounts, ratios and valuation instructions) that the supervisory adjustments could take?</td>
</tr>
<tr>
<td></td>
<td>Question</td>
</tr>
<tr>
<td>---</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>LL.</td>
<td>Should New Zealand adopt a more structured risk hierarchy? Why or why not?</td>
</tr>
<tr>
<td>MM.</td>
<td>Is it necessary to introduce risk charges for risks currently not hypothesised in solvency standards, for example operational risk? Why or why not?</td>
</tr>
<tr>
<td>NN.</td>
<td>Should solvency standards allow for a diversification benefit of some form? Is the Solvency II approach to relating risks appropriate for New Zealand conditions?</td>
</tr>
<tr>
<td>OO.</td>
<td>Should the deduction for policy and other liabilities be moved inside the Life IRCC?</td>
</tr>
<tr>
<td>PP.</td>
<td>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.</td>
</tr>
<tr>
<td>QQ.</td>
<td>Are there any other grouping approaches that you consider would be appropriate for solvency purposes? Please provide your reasons.</td>
</tr>
<tr>
<td>RR.</td>
<td>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.</td>
</tr>
</tbody>
</table>
### Appendix 1 – International comparisons

<table>
<thead>
<tr>
<th>Sectors</th>
<th>New Zealand</th>
<th>Australia – LAGIC</th>
<th>Europe – Solvency II</th>
<th>IAIS – ICS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Differentiation by sector?</strong></td>
<td>Yes. There are separate standards for life and non-life business, even though IPSA allows composite insurers.</td>
<td>Yes. There are separate, but consistent, standards for life and general insurers. Australian law does not permit composite insurers.</td>
<td>No. Solvency II is a single framework applicable to all insurers.</td>
<td>Entities are split into their insurance and non-insurance components, with the ICS being applied separately to each.</td>
</tr>
<tr>
<td></td>
<td>Whilst the standards are broadly consistent, they differ primarily with respect to treatment of insurance risk.</td>
<td>Life, General and Health business is regulated under separate acts, and composite insurers are not allowed.</td>
<td>Insurance risk is classified as life or non-life and treated differentially.</td>
<td>The ICS is a single framework applicable to all systemically important international insurers.</td>
</tr>
<tr>
<td></td>
<td>Some identical non-insurance risks faced by each sector are treated a little differently.</td>
<td></td>
<td>Non-insurance risks are treated uniformly for all insurers.</td>
<td>Insurance risk is classified as life or non-life and treated differentially.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NB: Composite insurers are not allowed, although accident and health business can be written by both life and non-life insurers.</td>
<td>There is no prohibition of composite insurers.</td>
</tr>
</tbody>
</table>

| Sub-sectors treated separately | Captive non-life insurers (dovetails with the non-life standard) | New capital standards for health insurance are in the process of development. These will be broadly aligned with the general insurance approach. | 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. | The solvency shocks in the ICS are instantaneous, so there is no allowance for dynamic hedging. |
| | Non-life insurers in run-off (dovetails with the non-life standard) | Category C (foreign general) insurers are required to maintain assets in Australia that exceed liabilities by the amount of the PCR. | UK run-off insurers must submit a scheme of operations to the BoE. | As the ICS deals with Internationally Active Insurance Groups (“IAIGs”), there are no specific provisions for captives or run-off insurers. |
| | Variable annuity providers (dovetails with the life standard) | Run-off insurers are required to maintain a run-off plan. | Small insurers are exempted from Solvency II (and instead subject to national law). | |

### 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)
<table>
<thead>
<tr>
<th>Grey areas</th>
<th>Australia – LAGIC</th>
<th>Europe – Solvency II</th>
<th>IAIS – ICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Line between life and non-life business.</td>
<td>• Private Health Insurance Act 2007, Life Insurance Act 1995 and Insurance Act 1973 appear to have mutually exclusive definitions of covered business.</td>
<td>• Health business treated as either 'similar to life' or 'similar to non-life', with insurance risk assessed accordingly.</td>
<td>• Follows Solvency II treatment of health business.</td>
</tr>
<tr>
<td>• GI business with long-term characteristics should ‘have regard’ to the life standard.</td>
<td>• As there is no explicit allowance for using life techniques, GI business with long-term characteristics appears to be treated as short-term.</td>
<td>• Overseas branches; whilst they must register with national authorities, it is unclear if Solvency II applies.</td>
<td>• Focus on IAIGs means that standard may need adaptation for domestic insurers.</td>
</tr>
<tr>
<td>• Health business generally treated under non-life standard (given NZ product design).</td>
<td>• Non-insurance business.</td>
<td>• Health business treated as either ‘similar to life’ or ‘similar to non-life’, with insurance risk assessed accordingly.</td>
<td>• Follows Solvency II treatment of health business.</td>
</tr>
<tr>
<td>• Aggregate solvency measures, defined in the standards as top-level insurer metrics, but largely ignored in licence conditions.</td>
<td>• Funds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Private Health Insurance Act 2007, Life Insurance Act 1995 and Insurance Act 1973 appear to have mutually exclusive definitions of covered business.</td>
<td>• Yes, for all life insurance business (and for composite policies with majority life components).</td>
<td>• Solvency II does not require the establishment of statutory funds.</td>
<td>• The ICS does not require the establishment of statutory funds.</td>
</tr>
<tr>
<td>• As there is no explicit allowance for using life techniques, GI business with long-term characteristics appears to be treated as short-term.</td>
<td>• Yes, for all life insurance business (note that there is no concept of composite policies)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Health business treated as either ‘similar to life’ or ‘similar to non-life’, with insurance risk assessed accordingly.</td>
<td>• No small insurer exemption.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Overseas branches; whilst they must register with national authorities, it is unclear if Solvency II applies.</td>
<td>• Separate statutory funds for investment-linked life business, and for non-grandfathered overseas business.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Health business treated as either ‘similar to life’ or ‘similar to non-life’, with insurance risk assessed accordingly.</td>
<td>• Life insurance - Capital requirements apply to each statutory fund, the shareholder’s fund and the insurer as a whole.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• The ICS does not require the establishment of statutory funds.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Funds**

<table>
<thead>
<tr>
<th>Statutory funds</th>
<th>New Zealand</th>
<th>Australia – LAGIC</th>
<th>Europe – Solvency II</th>
<th>IAIS – ICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Yes, for all life insurance business (and for composite policies with majority life components).</td>
<td>• Yes, for all life insurance business (note that there is no concept of composite policies)</td>
<td>• Solvency II does not require the establishment of statutory funds.</td>
<td>• The ICS does not require the establishment of statutory funds.</td>
<td></td>
</tr>
<tr>
<td>• Small insurer exemption.</td>
<td>• No small insurer exemption.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• According to the life solvency standard, statutory funds are a type of ‘life fund’, although this term is not used in IPSA.</td>
<td>• Separate statutory funds for investment-linked life business, and for non-grandfathered overseas business.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Life insurance - Capital requirements apply to each statutory fund, the shareholder’s fund and the insurer as a whole.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Zealand</td>
<td>Australia – LAGIC</td>
<td>Europe – Solvency II</td>
<td>IAIS – ICS</td>
<td></td>
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<tr>
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<td></td>
</tr>
<tr>
<td>• 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.</td>
<td>• General insurance – there are no statutory funds and the capital requirement applies to the insurer as a whole.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 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. |
<table>
<thead>
<tr>
<th>New Zealand</th>
<th>Australia – LAGIC</th>
<th>Europe – Solvency II</th>
<th>IAIS – ICS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Valuation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| **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). |
<table>
<thead>
<tr>
<th>Valuation rules</th>
<th>New Zealand</th>
<th>Australia – LAGIC</th>
<th>Europe – Solvency II</th>
<th>IAIS – ICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 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.</td>
<td>• For regulatory reporting purposes, APRA specifies its asset valuation requirements in LRS 300, but adjusts all the assets to fair value for solvency purposes, as per LRS 112.30</td>
<td>• 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.</td>
<td>• Insurance liabilities are calculated as the sum of a current estimate and a margin over the current estimate.</td>
<td></td>
</tr>
<tr>
<td>• Other adjustments to items of the balance sheet include fair value adjustments and impairment adjustments.31</td>
<td></td>
<td>• The Solvency Capital Requirement (“SCR”) under Solvency II is designed to achieve a 99.5% probability sufficiency over one year.</td>
<td>• Other adjustments to items of the balance sheet include fair value adjustments and impairment adjustments.31</td>
<td></td>
</tr>
</tbody>
</table>

**Solvency Control Levels**

<table>
<thead>
<tr>
<th>Upper level</th>
<th>New Zealand</th>
<th>Australia – LAGIC</th>
<th>Europe – Solvency II</th>
<th>IAIS – ICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Systemically important NZ banks 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</td>
<td>• 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.</td>
<td>• The Solvency Capital Requirement (“SCR”) under Solvency II is designed to achieve a 99.5% probability sufficiency over one year.</td>
<td>• 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.</td>
<td></td>
</tr>
</tbody>
</table>

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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.
<table>
<thead>
<tr>
<th>New Zealand</th>
<th>Australia – LAGIC</th>
<th>Europe – Solvency II</th>
<th>IAIS – ICS</th>
</tr>
</thead>
</table>

- 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 **banks** 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.
<table>
<thead>
<tr>
<th>New Zealand</th>
<th>Australia – LAGIC</th>
<th>Europe – Solvency II</th>
<th>IAIS – ICS</th>
</tr>
</thead>
</table>
| **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 resources to meet regulatory capital requirements and any additional capital needs.  
• The ICS does not address ICAAP or ORSA processes. |
<table>
<thead>
<tr>
<th>New Zealand</th>
<th>Australia – LAGIC</th>
<th>Europe – Solvency II</th>
<th>IAIS – ICS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Solvency Calculation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Purposes</strong></td>
<td>• Neither the Solvency Standards nor IPSA state the purpose of holding capital.</td>
<td>• 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.</td>
<td>• The Solvency Capital Requirement shall correspond to the Value-at-Risk (&quot;VaR&quot;) 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.</td>
</tr>
<tr>
<td><strong>Principles</strong></td>
<td>• Capital charges apply to specific items on the balance sheet. • There is no special treatment for “systemically important insurers”.</td>
<td>• Market risk charges include impacts of solvency stresses on all balance sheet items. • There is no special treatment for “systemically important insurers”.</td>
<td>• 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.</td>
</tr>
<tr>
<td>Deductions vs charges</td>
<td>New Zealand</td>
<td>Australia – LAGIC</td>
<td>Europe – Solvency II</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-------------</td>
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<td>----------------------</td>
</tr>
<tr>
<td></td>
<td>• 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, encumbered declared dividends, encumbered overseas assets.</td>
<td>• LAGIC takes a similar approach to NZ solvency standards, fully deducting a similar list of items from the capital base using ‘regulatory adjustments’.</td>
<td>• 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.</td>
</tr>
<tr>
<td></td>
<td></td>
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</tr>
<tr>
<td>Supervisory adjustments</td>
<td>• None within the solvency calculation. Supervisors may, however, impose minimum solvency margins through licence condition.</td>
<td>• Contained within the determination of the Prudential Capital Requirement (= Prescribed Capital Amount + Supervisory Adjustments).</td>
<td>• Art 85 of the directive allows supervisory authorities to modify “non-compliant” technical provisions.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Art 110 of the directive allows supervisory authorities to direct insurers to use specific parameters.</td>
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</tr>
</tbody>
</table>

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33 These licence conditions do not impact on the solvency margins and ratios disclosed by insurers
<table>
<thead>
<tr>
<th>Hierarchy of risks</th>
<th>New Zealand</th>
<th>Australia – LAGIC</th>
<th>Europe – Solvency II</th>
<th>IAIS – ICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td>Asset risks are separately stressed and combined using an aggregation formula. Catastrophe and insurance risks are treated separately.</td>
<td>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.</td>
<td>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.</td>
<td></td>
</tr>
</tbody>
</table>

| 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

<table>
<thead>
<tr>
<th>Component</th>
<th>Sectors Impacted</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coverage period</td>
<td>Life, Health</td>
<td>The treatment of Yearly Renewable Term (&quot;YRT&quot;) 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.</td>
</tr>
</tbody>
</table>
| 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.
<table>
<thead>
<tr>
<th>Component</th>
<th>Sectors Impacted</th>
<th>Description</th>
</tr>
</thead>
</table>
| 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.
<table>
<thead>
<tr>
<th>Component</th>
<th>Sectors Impacted</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deferred Acquisition Costs</td>
<td>Life, Non-life</td>
<td>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 (&quot;DAC asset&quot;) 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.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Onerous contracts</td>
<td>Life, Non-life</td>
<td>NZ IFRS 4 has a liability adequacy test (&quot;LAT&quot;), 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.</td>
</tr>
</tbody>
</table>

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\(^{38}\) 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

Deductions from Capital

- Deferred tax assets
- Related party investments
- Intangible assets
- Other

Reinsurance Recovery Risk Charge

- Reinsurer 1: Net exposure × Reinsurance Risk Capital Factor
- Reinsurer 2: Net exposure × Reinsurance Risk Capital Factor
- Reinsurer n: Net exposure × Reinsurance Risk Capital Factor

Greater of

- Pandemic Risk Charge
- Other Extreme Event Charge

Risk-Weighted Exposures Charge

- Counterparty 1: Excess exposure × Resilience Capital Factor
- Counterparty 2: Excess exposure × Resilience Capital Factor
- Counterparty n: Excess exposure × Resilience Capital Factor

Derivatives Charge

- Option: Face value × delta factor
- Mark-to-market gains: Gain × Resilience Capital Factor

Asset Risk Capital Charge

- Equity & bond derivatives: Net position × Resilience Capital Factor

Interest Rate Risk Charge

- Downwards (shocked interest rates subject to a floor of zero)

Foreign Currency Capital Charge

- 22% × |net open foreign exchange position|

Solvency Liabilities Resilience Impact

- Insurance Risk Capital Charge

Determined as below

Other liabilities

Repayable amount (financial reinsurance debt)

Insurance Risk Capital Charge

- RPG1: Greater of
  - Prudential margins
  - Best Estimate Liability
  - Current termination value

- RPG2: Greater of
  - Prudential margins
  - Best Estimate Liability
  - Current termination value

- RPGn: Greater of
  - Prudential margins
  - Best Estimate Liability
  - Current termination value
## Non-life insurance

### Deductions from Capital

<table>
<thead>
<tr>
<th>Deferred tax assets</th>
<th>Intangible assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Related party investments</td>
<td>Other</td>
</tr>
</tbody>
</table>

### Reinsurance Recovery Risk Charge

<table>
<thead>
<tr>
<th>Reinsurer 1</th>
<th>Reinsurer 2</th>
<th>Reinsurer n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinsurance Recovery Asset ( \times ) Reinsurance Risk Capital Factor</td>
<td>Reinsurance Recovery Asset ( \times ) Reinsurance Risk Capital Factor</td>
<td>Reinsurance Recovery Asset ( \times ) Reinsurance Risk Capital Factor</td>
</tr>
</tbody>
</table>

### Catastrophic Risk Capital Charge

<table>
<thead>
<tr>
<th>Insurers subject to extreme event exposure</th>
<th>Insurers not subject to extreme event exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retained cost of extreme event exposure or Two times the largest per-risk retention</td>
<td>Cost to reinstate reinsurance programme</td>
</tr>
</tbody>
</table>

### Foreign Currency Capital Charge

\( 22\% \times \text{net open foreign exchange position} \)

### Interest Rate Risk Charge

The most detrimental impact on Solvency Margin of a change in value of fixed interest assets and liabilities due to a 1.75% nominal and a 0.6% real movement in interest rates

<table>
<thead>
<tr>
<th>Downwards (shocked interest rates subject to a floor of zero)</th>
<th>Upwards</th>
</tr>
</thead>
</table>

### Asset Concentration Risk Charge

<table>
<thead>
<tr>
<th>Counterparty 1</th>
<th>Counterparty 2</th>
<th>Counterparty n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excess exposure ( \times ) Resilience Capital Factor</td>
<td>Excess exposure ( \times ) Resilience Capital Factor</td>
<td>Excess exposure ( \times ) Resilience Capital Factor</td>
</tr>
</tbody>
</table>

### Asset Risk Capital Charge

<table>
<thead>
<tr>
<th>Resilience Risk Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equity &amp; bond derivatives</td>
</tr>
</tbody>
</table>

### Risk-Weighted Exposures Charge

<table>
<thead>
<tr>
<th>Counterparty 1</th>
<th>Counterparty 2</th>
<th>Counterparty n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset exposure ( \times ) Resilience Capital Factor</td>
<td>Asset exposure ( \times ) Resilience Capital Factor</td>
<td>Asset exposure ( \times ) Resilience Capital Factor</td>
</tr>
</tbody>
</table>

### Derivatives Charge

<table>
<thead>
<tr>
<th>Options</th>
<th>Mark-to-market gains</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net position ( \times ) Resilience Capital Factor</td>
<td></td>
</tr>
</tbody>
</table>

### Run-off Risk Capital Charge

\[ \sum_{\text{class}} \text{Net Outstanding Claim Liability} \times \text{Run-off Risk Capital Factor} \] + \text{Outstanding Claim Liability Adjustment to 75% POS}

### Underwriting Risk Capital Charge

\[ \sum_{\text{class}} \text{Premium Liability} \times \text{Underwriting Risk Capital Factor} \] + \text{Premium Liability Adjustment to 75% POS}

### Long-term insurance risk

Revisions to provisions for unexpired risks and outstanding claims + Additional capital charge

### Policy & Other Liabilities

<table>
<thead>
<tr>
<th>Other liabilities</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Outstanding Claim Liabilities</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Premium Liabilities</th>
</tr>
</thead>
</table>
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.
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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<tr>
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<th>Content</th>
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</tr>
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<td>Premium allocation approach</td>
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<td>Resources available</td>
<td>22</td>
</tr>
</tbody>
</table>
1. Scope

Requirements

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 scenario 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 scenario 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.

Definitions

<table>
<thead>
<tr>
<th>Contract</th>
<th>A contract is an agreement between two or more parties that creates enforceable rights and obligations.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Insurance contract</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Reinsurance contract</strong></td>
<td>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).</td>
</tr>
</tbody>
</table>

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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 held

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.

TRG 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.

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

Requirements

To recognise and measure insurance contracts, portfolios of insurance contracts 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 held

A reinsurance contract held cannot be considered onerous applying IFRS 17. 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

Requirements\(^{10}\)

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 held\(^{11}\)

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.

---


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

**Requirements**

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 held**

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.

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.
14 See Section 6 (Measurement—contractual service margin).
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

Requirements

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 held

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.

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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

Requirements\textsuperscript{17}

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;\textsuperscript{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.

\textsuperscript{17} Paragraphs 43–46 and B96–B119 of IFRS 17 and paragraphs BC218–BC287 of the Basis for Conclusions on IFRS 17.

\textsuperscript{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 held\textsuperscript{19}

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 (i.e., 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.

\textit{continued...}

\textsuperscript{19} Paragraphs 65–68 of IFRS 17 and paragraphs BC310–BC315 of the \textit{Basis for Conclusions on IFRS 17}. 
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 of the group of underlying contracts is matched with a change in the fulfilment cash flows on the group of reinsurance 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.

### Examples—CSM on initial recognition of a group of reinsurance contracts held

<table>
<thead>
<tr>
<th>Net cost on purchasing reinsurance</th>
<th>Net gain on purchasing reinsurance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Expected cash outflow to reinsurer</strong></td>
<td><strong>CSM—net cost</strong></td>
</tr>
<tr>
<td><strong>Expected cash inflow from reinsurer</strong></td>
<td><strong>Risk adjustment</strong></td>
</tr>
</tbody>
</table>

...continued
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

Requirements

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.

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Reinsurance contracts held

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

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21 Paragraphs 69–70 of IFRS 17 and paragraph BC301 of the Basis for Conclusions on IFRS 17.
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.

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underlying contract</td>
<td>Underlying contract</td>
</tr>
<tr>
<td>Underlying contract</td>
<td>Underlying contract</td>
</tr>
</tbody>
</table>

The coverage period for each contract in the group is one year. Therefore, the group of underlying insurance contracts is eligible for the premium allocation approach (meets criterion b).
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.

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group of reinsurance contracts held</strong></td>
<td><strong>Group of reinsurance contracts held</strong></td>
</tr>
<tr>
<td><strong>Reinsurance contract held</strong></td>
<td><strong>Reinsurance contract held</strong></td>
</tr>
</tbody>
</table>

The 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 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

**Requirements**

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 that are not VFA contracts.

**Reinsurance contracts held**

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.

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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

Requirements\(^{24}\)

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 held\(^{25}\)

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.

\(^{24}\) 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*.
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.

### Example—presentation of insurance service result

#### Net presentation example

<table>
<thead>
<tr>
<th>In currency units</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insurance revenue</td>
<td>10,000</td>
</tr>
<tr>
<td>Insurance service expenses</td>
<td>(7,000)</td>
</tr>
<tr>
<td>Net expense from reinsurance contracts</td>
<td>(500)</td>
</tr>
<tr>
<td><strong>Insurance service result</strong></td>
<td><strong>2,500</strong></td>
</tr>
</tbody>
</table>

#### Gross presentation example

<table>
<thead>
<tr>
<th>In currency units</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insurance revenue</td>
<td>10,000</td>
</tr>
<tr>
<td>Insurance service expenses</td>
<td>(7,000)</td>
</tr>
<tr>
<td>Amounts recovered from reinsurance</td>
<td>1,000</td>
</tr>
<tr>
<td>Reinsurance premiums</td>
<td>(1,500)</td>
</tr>
<tr>
<td><strong>Insurance service result</strong></td>
<td><strong>2,500</strong></td>
</tr>
</tbody>
</table>
10. Disclosures

Requirements

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 held

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.

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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**
- **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-17-implementation
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Review

Takaful: An Islamic insurance instrument

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Accepted 9 July, 2010

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 micro-insurance. 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...
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 riba—known 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 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 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 fulfill 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 sub-class 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 Shari’ah-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 Shareholders capital and expenses paid to the shareholder by the policyholders for (i) managing the company on behalf of the policyholders, and (ii) managing the shareholders’ 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 multi-racial 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.

REFERENCES

The Geneva Association

The Geneva Association is the leading international insurance think tank for strategically important insurance and risk management issues.

The Geneva Association identifies fundamental trends and strategic issues where insurance plays a substantial role or which influence the insurance sector. Through the development of research programmes, regular publications and the organisation of international meetings, The Geneva Association serves as a catalyst for progress in the understanding of risk and insurance matters and acts as an information creator and disseminator. It is the leading voice of the largest insurance groups worldwide in the dialogue with international institutions. In parallel, it advances—in economic and cultural terms—the development and application of risk management and the understanding of uncertainty in the modern economy.

The Geneva Association membership comprises a statutory maximum of 90 chief executive officers (CEOs) from the world’s top insurance and reinsurance companies. It organises international expert networks and manages discussion platforms for senior insurance executives and specialists as well as policymakers, regulators and multilateral organisations.

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.
Modernising Insurance Solvency Regimes—Key Features of Selected Markets

A STUDY BY THE GENEVA ASSOCIATION
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1. Foreword

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.
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 ComFrame, 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 risk-based 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.

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1 The U.S. uses statutory accounting principles (SAP).
4. Choice of Jurisdictions and Methodology
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 representative 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. 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.

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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)

- 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) 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

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3 For an overview, see Ernst & Young (2014).
4 The ANS (Agência Nacional de Saúde Suplementar) is responsible for health insurance.
BACKGROUND INFORMATION ON THE SOLVENCY REGIMES INCLUDED IN THE STUDY

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.


\(^6\) The information on China provided in the study was obtained from other sources than via the questionnaire.
6. Solvency Regimes: an Analysis of Selected Elements
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.

Table 1: Overview of solvency regimes covered by this study

<table>
<thead>
<tr>
<th>Australia</th>
<th>Brazil</th>
<th>Canada</th>
<th>China</th>
<th>European Union</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SUPERVISOR</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APRA/ASIC</td>
<td>SUSEP/ANS</td>
<td>OSFI</td>
<td>CIRC</td>
<td>NCA</td>
</tr>
<tr>
<td><strong>REGULATION</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LAGIC</td>
<td>Insurance Regulatory framework</td>
<td>Insurance Regulatory framework</td>
<td>C-ROSS</td>
<td>Solvency II</td>
</tr>
<tr>
<td><strong>STRUCTURE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 pillars</td>
<td>3 pillars</td>
<td>3 pillars</td>
<td>3 pillars</td>
<td>3 pillars</td>
</tr>
<tr>
<td><strong>YEAR OF MAJOR CHANGES TO REGULATION</strong></td>
<td>2013⁸</td>
<td>2016⁹</td>
<td>2014</td>
<td>2016</td>
</tr>
<tr>
<td><strong>REGULATORY CAPITAL REQUIREMENT</strong></td>
<td>Risk-based</td>
<td>Risk-based</td>
<td>Risk-based</td>
<td>Risk-based</td>
</tr>
<tr>
<td><strong>ASSET VALUATION</strong></td>
<td>IFRS-based</td>
<td>IFRS-based</td>
<td>IFRS-based</td>
<td>IFRS-based</td>
</tr>
<tr>
<td><strong>LIABILITY VALUATION</strong></td>
<td>DCF¹⁰</td>
<td>DCF (LAT test)</td>
<td>DCF</td>
<td>DCF</td>
</tr>
<tr>
<td><strong>CONFIDENCE LEVEL / PERIOD</strong></td>
<td>99.5% / 1 year</td>
<td>Varies (always above 95%) / 1 year</td>
<td>99% / 1 year (TailVaR)</td>
<td>99.5% / 1 year</td>
</tr>
<tr>
<td><strong>RISK METRIC</strong></td>
<td>VaR</td>
<td>VaR</td>
<td>TailVaR¹²</td>
<td>VaR</td>
</tr>
<tr>
<td><strong>INTERNAL MODELS</strong></td>
<td>Allowed</td>
<td>Allowed</td>
<td>Partially allowed</td>
<td>n/a</td>
</tr>
<tr>
<td><strong># OF CAPITAL TIERS</strong></td>
<td>2</td>
<td>Limitations similar to Solvency II tiers</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>QUALITATIVE REQUIREMENTS</strong></td>
<td>Pillar 2</td>
<td>Pillar 2</td>
<td>Yes</td>
<td>Pillar 2</td>
</tr>
<tr>
<td><strong>OWN RISK AND SOLVENCY ASSESSMENT</strong></td>
<td>ICAAP</td>
<td>Planned</td>
<td>ORSA</td>
<td>SARMRA</td>
</tr>
</tbody>
</table>

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.

| 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. |
| 9 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. |
| 10 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.
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.

<table>
<thead>
<tr>
<th>JAPAN</th>
<th>MEXICO</th>
<th>SINGAPORE</th>
<th>SOUTH AFRICA</th>
<th>SWITZERLAND</th>
<th>UNITED STATES</th>
</tr>
</thead>
<tbody>
<tr>
<td>FSA</td>
<td>CNSF</td>
<td>MAS</td>
<td>FSB/SARB</td>
<td>FINMA</td>
<td>Insurance Commissioners / Federal Reserve[13]</td>
</tr>
<tr>
<td>Insurance Business Act</td>
<td>Insurance regulatory framework</td>
<td>RBC 2</td>
<td>Insurance Bill and Standards to be made thereunder[14]</td>
<td>Insurance Supervision Act</td>
<td>Insurance regulatory framework</td>
</tr>
<tr>
<td>Chapters</td>
<td>3 pillars</td>
<td>RBC 2 Standards</td>
<td>3 pillars</td>
<td>SST plus Pillar 2 and 3 requirements</td>
<td>7 core principles</td>
</tr>
<tr>
<td>Japanese GAAP</td>
<td>IFRS-compatible</td>
<td>IFRS-based</td>
<td>IFRS-based</td>
<td>Market (consistent) value</td>
<td>U.S. SAP[16]</td>
</tr>
<tr>
<td>DCF (planned)</td>
<td>DCF</td>
<td>DCF</td>
<td>DCF</td>
<td>Market consistent value</td>
<td>U.S. SAP</td>
</tr>
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<td>% depends on risk category / 1 year</td>
<td>99.5% / 1 year</td>
<td>99.5% / 1 year</td>
<td>99.5% / 1 year</td>
<td>99% / 1 years (TailVaR)</td>
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</tr>
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<td>VaR</td>
<td>VaR</td>
<td>VaR</td>
<td>VaR</td>
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</tr>
<tr>
<td>Partially allowed</td>
<td>Allowed</td>
<td>Allowed</td>
<td>Allowed</td>
<td>Allowed</td>
<td>Partially allowed</td>
</tr>
<tr>
<td>No tiers—core solvency margin</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>n/a</td>
</tr>
<tr>
<td>No</td>
<td>Pillar 2</td>
<td>Pillar 2</td>
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<td>ARSI</td>
<td>ORSA</td>
<td>ORSA</td>
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</tr>
</tbody>
</table>

[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.
[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 99.5 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.

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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.

• 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 risk-based 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-life insurers, the standard method will be factor-based. The conceptual framework adopted a VaR approach for the calculation of the quantitative capital requirements.\textsuperscript{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 regime\textsuperscript{20} 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.\textsuperscript{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

\textsuperscript{19} Van Hulle (2014).
\textsuperscript{20} which is not law yet but will become law once the Insurance Bill has been promulgated.
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 run-off. 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.

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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 one-year 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.

• 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.

**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
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.
8. Literature on Solvency Regimes
MODERNISING INSURANCE SOLVENCY REGIMES—KEY FEATURES OF SELECTED MARKETS


9. Annex 1: Country Regimes

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AUSTRALIA

REGULATOR/SUPERVISORY BODY


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.

QUALITATIVE REQUIREMENTS

- 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

- 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.

QUALITATIVE REQUIREMENTS

- 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

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.

QUALITATIVE REQUIREMENTS
• 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


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.

QUALITATIVE REQUIREMENTS

- 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 (Solveny 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

- 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 mark-to-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

ACCOUNTING STANDARDS

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.

QUALITATIVE REQUIREMENTS

• 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


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


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.

QUALITATIVE REQUIREMENTS

• 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 Assessment

- 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.

  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.

- 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.
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 SI ratio.
- Group regulatory capital requirement: For Swiss-based 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).
QUALITATIVE REQUIREMENTS

- 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.
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?
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

This report has been conducted by The Geneva Association. Dr Matthias Schmautz, independent researcher and lecturer, has assisted The Geneva Association as an analyst and writer of the report, whilst Professor Karel Van Hulle acted as a reviewer.

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.