



Core Curriculum for Insurance Supervisors

Module 5.1.1 Reinsurance

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Using the Core Curriculum

Purpose

The IAIS Insurance Core Principles (ICPs) provide a globally accepted framework for the supervision of the insurance sector. The ICPs is suitable to apply to insurance supervision in all jurisdictions regardless of the level of development or sophistication of the insurance markets and the type of insurance products or services supervised.

The Core Curriculum provides non-commercial training materials to support insurance supervisors as they implement the ICPs. They give insight and background to the ICPs and the concepts underlying them. There is also a focus on the practical application of supervisory concepts.

Supervisory practices are constantly evolving reflecting experience and changing environments. Consequently, Core curriculum materials should not be read as providing 'the answer' to a particular issue, but as providing guidance, approaches and matters to be considered by supervisors when they address specific issues in their own particular context.

Audience

The key users of the Core Curriculum material include:

- Trainers of insurance supervisors
- Individual insurance supervisors, and
- Other parties interested in sound and effective regulatory and supervisory practices.

Link document

The Core Curriculum Link document provides a mapping between the ICPs and the Core Curriculum modules. As ICPs and/or the Core Curriculum modules evolve, their relationship is described by the Link document (see 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:

- 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 policies 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 multiline products or multi-trigger products*, in which the users can consolidate risk and combine uncorrelated risks, thus allowing more efficient risk transfer to insurers or reinsurers. The multi-trigger aspect is designed to prevent moral hazard and requires a second event, highly correlated with the insured's financial circumstances, to trigger payments.
- *Structured finance or credit enhancement*, in which the (re)insurer provides some form of financial guarantee to the borrowing institution, lowering its credit costs.

With the exception of finite risk insurance, these products are not considered further here.

3.7 Finite risk reinsurance

Finite risk reinsurance has evolved over time, essentially in the non-life insurance sector.

Finite risk reinsurance is based on the same instruments as traditional reinsurance. It has the following characteristics:

- *Timing risk*. The transfer of underwriting risk and the transfer of timing risk, with emphasis on the time value of money
- *Limited assumption*. Limited assumption of risk by the reinsurer, capping the potential economic downside for the reinsurer
- *Multiyear*. Multiyear period of contracts, providing some smoothing of experience
- *Investment income*. Explicit inclusion of investment income in the contract
- *Profit sharing*. The sharing of results between the insurer and reinsurer.

An issue that arises in some jurisdictions is whether there is sufficient risk transfer for finite risk reinsurance to be accounted for as reinsurance. For example, the September 11, 2001, terrorist attack in New York City, major accounting scandals, and the weakened state of several high profile insurers and reinsurers raised concerns about finite risk reinsurance and its accounting treatment. These concerns have been reduced, although treatments may vary among jurisdictions. In some cases, "blended" reinsurance covers emerged, combining traditional and finite risk reinsurance. This has the advantage of reinforcing the transfer of risk and of providing more cost effective reinsurance coverage by pooling over both product lines and multiple years.

Insurers commonly engage in our main forms of finite risk reinsurance:

- *Loss portfolio transfer (LPT)*, in which the insurer transfers an existing loss portfolio and associated reserves to the reinsurer. This reinsures the timing risk of the claims being settled more quickly than expected. LPTs also improve the balance sheet

position, especially in the year of writing. By permitting insurers to exit particular lines of business, LPTs can facilitate mergers and acquisitions.

- *Adverse development cover (ADC)*, which protects the insurer against unexpected adverse development of claims provisions that remain with the insurer. This provides protection against adverse incurred but not reported (IBNR) and incurred but not enough reported (IBNER) events. ADCs also improve balance sheet position, facilitate mergers and acquisitions, and may improve access to traditional excess covers.
- *Finite quota share (FQS)*, which is similar to traditional quota share but addresses the insurer's financial needs more effectively. The insurer cedes part of its unearned premium provision and in return receives a reinsurance commission. This provides smoother financial results for the insurer, increased and stabilised underwriting capacity, and assistance with solvency requirements.
- *Spread loss treaty (SLT)*, which provides the insurer with more stable capacities and prices due to the multiyear nature of the contract. The insurer pays a specified premium into an "experience" account held by the reinsurer. At the end of the term, the experience account is settled. This smooths results for the insurer, reduces variability in underwriting, transfers timing risk, and stabilises reinsurance.

3.8 Retrocessions

A reinsurer may itself choose to spread risk further to other reinsurers. Such a process is called retrocession. In principle, retrocessions further diversify risk.

However, in practice, some issues can make retrocession less beneficial. It is often the case that reinsurance arrangements are not "look through" in the sense that a reinsurer may not disclose to an insurer where its retrocessions may be placed. As a consequence there is the possibility of a risk going through a "spiral" among a group of reinsurers and, ultimately, at least in part, unknowingly being passed back to the original insurer. A well-known example of a reinsurance spiral is the London market excess spiral of the 1980s, which either caused or contributed to the failure of several reinsurance companies in the early 1990s.

Although it may be difficult to assess the risk of reinsurance spirals, this suggests that an assessment of immediate reinsurers alone may not be adequate. Some understanding of the retrocession policies of reinsurers, as well as an assessment of the breadth of retrocession markets, can be helpful. In markets where the number of reinsurers is limited, the risk of reinsurance spirals may be increased.

Similarly, for an insurer dealing with both inward and outward reinsurance, inward reinsurance can bring the risk of retaking on its own risk without intending to: the insurer sells the initial

business, keeps the retention, reinsures, and then gets back some of the reinsured risk, either directly from the reinsurer or indirectly through a more complex loop.

3.9 Government sponsored pools

There are certain perils, for example, floods or other natural disasters, or terrorism that generate risks that are unlike other risks. They may be extremely severe and extremely infrequent; in some cases, there is no precedent. They may not have the random nature typical of other risks, like in the case of terrorism. Often, protection from these risks is provided by government sponsored pools.

Motivations behind government pools vary by jurisdiction. In the US, for example, some pools have arisen in the face of market failure of private sector insurance following a significant natural disaster or, in the case of terrorism risk, the motivation was to address the uninsurability emerging from the September 11 2001 terrorist attacks. In general government concerns relate to provision of affordable insurance and/or to the provision of insurance in the absence of a market for it. Government pools have certain advantages over the private sector including their ability to raise funds post-event, but face financial unsustainability given, for example, political intervention to maintain affordability of cover in high-risk areas.

Examples of government sponsored pools include:

- Natural Disasters:
- The Mexican *Programa MultiCat México*, that covers risks from hurricanes and earthquakes, and operational since 2009. MultiCat was jointly developed by Mexico and the World Bank and covers not only losses emerging from property damage but also post-event emergency costs. MultiCat is funded by ILSs (i.e. cat bonds), described in Section 3.1 above
- The *Caribbean Catastrophe Risk Insurance Facility (CCRIF)* a regional risk pooling facility that offers parametric insurance designed to limit the financial impact of catastrophic tropical cyclones, earthquakes and excess rainfall events on Caribbean governments. CCRIF was created in 2007 and like MultiCat, it counted with the support of the World Bank. Also, like MultiCat, CCRIF is funded by ILSs (i.e. cat bonds), described in Section 3.1 above
- The *African Risk Capacity (ARC)* offers, among other things, insurance coverage for drought, cyclone and flood to member countries. ARC has been active since 2012 and over the years in excess of 30 African counties have become members.
- The USA *National Flood Insurance Program (NFIP)*, created in 1969 and administered by the Federal Emergency Management Agency (FEMA). NFIP cover damages from floods.

- Also, at state level, other US programmes include:
- The *Texas Windstorm Insurance Association (TWIA)*, originally created in 1972 and offering windstorm and hail insurance. TWIA also funds part of its exposure via cat bonds
- The *Texas Catastrophe Reserve Trust Fund (CRTF)*, established in 1993 and providing property catastrophe insurance on natural disasters
- The *Florida Hurricane Catastrophe Fund (FHCF)*, established 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 Herverzekeringsmaatschappij voor Terrorismeschaden N.V. (NHT), operational since 2003
- The Spanish Consorcio de Compensación 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 10 percent of 10 percent—namely, 1 percent—of a risk is a significant transfer of risk. A further potential difficulty is that such an approach creates an arbitrage point for players to move around and seek to subvert, in intent if not in form. Also, the assessment of such probabilities from the actuarial perspective cannot be exact, as they reflect the impact of future experience, which can be estimated but not known.

Other countries may take a more principles based approach aimed at assessing the intent and economic outcomes of the transaction (a “look through” approach). Also, in some countries supervisors may have to approve reinsurance arrangements before they are put in place and reserve the right to vary or void an arrangement after its inception. In principle, while valid arguments may be advanced in favour of such an approach, it may carry an element of moral hazard for the supervisor. If there is an adverse outcome, the supervisor may be blamed for a decision that should have been made by the insurer’s board and management.

If a transaction is not treated as reinsurance, it will be treated as a “funding” contract, meaning, effectively, as a loan. Ideally, a zero result should then be achieved, implying that discounting is being applied to the future claim recovery payments. The importance of allowing a

transaction to be treated as reinsurance can be seen in the following example regarding 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 addresses or not. If unaddressed the insurer may be liquidated. Looking at insurer’s impairments and liquidations may provide a valid indication of the prevalence of the matter in the market.

7.1 Insurer failure

A longitudinal study by credit rating agency A.M. Best looking at impairments and liquidations among insurers rated by it found that over the period 1978 to 2015 a total of 761 cases of insurers, including reinsurers, that at some point were designated as impaired¹. The table below provides detailed of this:

Years	No. of Impairments	% of Total Impairments
1978 - 1979	14	1.8%
1980 - 1981	15	2.0%
1982 - 1983	23	3.0%
1984 - 1985	57	7.5%
1986 - 1987	50	6.6%
1988 - 1989	64	8.4%
1990 - 1991	92	12.1%
1992 - 1993	62	8.1%
1994 - 1995	34	4.5%
1996 - 1997	50	6.6%
1998 - 1999	45	5.9%
2000 - 2001	76	10.0%
2002 - 2003	76	10.0%
2004 - 2005	20	2.6%
2006 - 2007	16	2.1%
2008 - 2009	23	3.0%
2010 - 2011	17	2.2%
2012 - 2013	13	1.7%
2014 - 2015	14	1.8%
Total	761	100.0%

¹ A.m. Best (2016) Best’s Impairment and Rating Transition Study: 1977 – 2015.

The data above was drawn from a pool of 5,183 insurers, including reinsurers, that A.M. Best rated during the period. It is interesting to note that the period 1984 – 1993 represent one of heavy impairments, peaking in 1990 – 1991, with 92 impairments, or 12% of all impairments. A.M. Best attributes this circumstance to life and health insurers' purchases of junk bonds and commercial mortgage holdings and to property and casualty insurers' exposure to catastrophic losses.

Analysis of the 1978-2015 impairment dataset shows that when looked at average cumulative impairment rate over 15 year periods, rates vary dramatically depending on the rating of the insurers. For example, over 25 years while, the average cumulative impairment rate of an A+ rated insurer appears to be of 6.69%, the same indicator increases to 19.32% for a B+ rated carrier and to 40.47% for a C+ rated insurers.

AM Best also looked at the share of insurers that fail to address the causes of impairment and were liquidated. In this respect, and following the example of the A+ rated insurer above, average cumulative liquidation rate appears to be of 1.62%. This figure grows to 6.30% for B+ rated insurers and 13.80% for C+ rated insurers.

In addition to the prevalence of impairment or liquidation, it is important to understand the causes underlying these phenomena. At a summary level, perhaps 5–10 percent of insurer failures can be attributed to the failure of reinsurance in some form, and perhaps up to a further 5–10 percent can be attributed to causes (in particular, catastrophes) that could, or perhaps should in retrospect, have been reinsured.

From the reinsurance perspective, a couple of comments are relevant. The primary cause of insurer failures appears to be inadequate management and inadequate internal controls in the great majority of cases. Moreover, reinsurance risk appears to be a common trigger for problems.

7.2 Reinsurer Failure

From the reinsurer perspective, causes of failures include the following:

- Insufficient capital
- Insufficient IBNR or other technical provisions
- Fraud
- Catastrophic events
- Poor underwriting
- Over exposure to a high-risk market
- Risky assets

- Mismanagement
- Default of retrocessionaire

8 Abuses of reinsurance

An example of an abuse of reinsurance is “fronting,” where an insurer, often with minimal capital of its own, is established with a view to reinsuring the great bulk of the risks underwritten. This type of arrangement poses several significant problems:

- *No incentive for the direct insurer.* There is moral hazard in that the direct insurer has no or little incentive to underwrite or administer claims properly, as reinsurance commissions probably outweigh any losses that may arise from the low level of retention.
- *Inappropriate ownership structure.* Major problems may arise when the reinsurer also owns the fronting company or vice versa.

An incentive for fronting may be an agent or broker seeking to capture not only commissions but also reinsurance profits, without the usual capital requirements or skills and experience to deal with adverse experience. In the event of a failure by the reinsurer, the full obligation for the direct insurance contracts reverts back to the insurer.

A review of retention levels is the key to detecting and addressing fronting. In general, reinsurers expect insurers to retain a significant amount of risk in order to provide an incentive to manage their insured business well, and there may also be supervisory constraints on the level of retention required. In general, insurers tend to seek to develop long-term relationships with their reinsurers.

Reinsurance issues have been involved in a number of high profile failures, and some are noted here:

- *HIH Group in Australia.* The HIH Royal Commission has established the role of abuses of reinsurance and financial reinsurance agreements in the failure of HIH Group in 2001. The situation was compounded by the existence of “side letters,” unknown to the supervisor and other parties. These voided some of the terms of the treaty. Also, the directors of the company may have been unaware of the side letters, calling into question the quality of the overall corporate governance of HIH. (There is a large CC Case study which discusses HIH.)
- *Gerling in the United States.* Gerling’s U.S. subsidiaries failed due to credit losses, the September 11 terrorist attacks, and asbestos losses. Gerling’s other reinsurance subsidiaries provided support, which, in turn, caused them to fail, even though they raised additional capital. This illustrates the risk of group contagion.
- *Independent Insurance Company Limited in the United Kingdom.* This significant and fast growing non-life insurer closed to new business in June 2001 and went into receivership. While the major cause of its demise appears to be under

reserving, some of the company's reinsurance arrangements appear to have been questionable.

- *Reliance National in the United States.* This insurer fronted large amounts of workers' compensation carve-out business. A reinsurance spiral behind it collapsed, leaving the company unable to pay claims. The subsequent loss of reputation then caused healthy non U.S. companies in the group to fail.
- *Cardinal Insurance in the United States.* This insurer obtained stop-loss cover at very low premium rates, virtually ensuring that it made a profit no matter how bad the business experience. The reinsurer argued that the reinsurance cover was obtained in a fraudulent way and did not pay the claims. Cardinal was liquidated.

Exercise

Ex 6 Explain why "fronting" has the potential to lead to abuse of reinsurance arrangements.

9 Reinsurance contracts

Reinsurance treaties should satisfy the standard requirements of contracts as well as address the particular needs of the specific reinsurance arrangement under consideration. This includes immediate matters such as having good records of treaties and ensuring that all current treaties are properly signed and executed.

9.1 Contract Content

At a summary level, reinsurance treaties should address the following broad areas:

- The details of parties
- Business line(s) covered, including limits and exclusions
- Premiums and commissions
- Management of changes in policies covered, such as changes in sums insured under inflation clauses
- Reporting between the parties
- Claims requirements and processes
- Profit-sharing arrangements, where applicable
- Arbitration in case of dispute, for example, through differing interpretations of a treaty or omission of information in a treaty
- Governing laws
- Accounting criteria
- Termination conditions, ensuring that the conditions of termination are clear because, particularly in the case of life insurance, they may refer only to new business or may involve the recapture of existing business previously placed with the reinsurer.

Some template reinsurance contracts are publicly available. A review of these templates shows some of the complexities involved in establishing clear and comprehensive reinsurance arrangements.

9.2 Timing

Especially when insurers or reinsurers are in difficulty or have failed, the clarity and completeness of documentation supporting reinsurance arrangements become increasingly important. However, in general business practice, clear and complete documentation is

considered good practice and should emerge as a result of good corporate governance processes.

9.3 Life and non-life reinsurance contracts

The discussions in this module are applicable to both life and non-life insurance unless specifically indicated otherwise. Several differences have been noted:

- *Reinsurance program structure.* Life reinsurance treaties tend to cover indefinite periods, and the termination conditions affect new business only, whereas non-life reinsurance arrangements traditionally last for one year and cover only a specific line of business.

This increases the importance, for non-life reinsurance, of ensuring that proper documentation, such as cover notes, is in place. Facultative reinsurance is more common for life insurance. The term “coinsurance” has very different meanings in the context of life and non-life reinsurance, as may the usual order of application of reinsurance cover. The use of layers is common in non-life insurance, but not in life insurance.

- *Product structure.* Many life insurance products, especially traditional whole-of-life and endowment products, have high initial expenses that are expected to be recouped over the later years of the contract. This can lead to initial capital strain for life insurers. Reinsurance may alleviate some of this initial capital strain.

This phenomenon is not as pronounced with non-life insurance, in which one year insurance contracts predominate.

- *Finite risk and alternative risk transfer.* While more recent developments in reinsurance can be used in the context of life insurance, they have developed primarily in the non-life context.
- *Supervisory regimes and practices.* Legislative requirements, actuarial approaches, and industry practices vary between life and non-life insurance and hence are reflected in reinsurance considerations. This is not surprising given the nature of the risks covered.
- *Retention levels.* Industry retention levels, in general, are significantly higher in life insurance than in non-life insurance. This reflects the increased heterogeneity of non-life insurance risks as well as the increased volatility of non-life insurance risks.
- *Credit risk.* Reinsurance failures of some type are a significant, although not the most likely, cause of failures of insurers, particularly for non-life insurance.

- *Complexity, volatility, and change.* As a general comment, the role of reinsurance is more important, more complex, and more subject to change and volatility in the non-life than in the life insurance industry. The non-life insurance, and so reinsurance, industry is more subject to changes in expectation, legislation, and volatility in potential claims than the life insurance industry. As a specific example, consider the ongoing risks and issues relating to the past use of asbestos.

10 Further reading

10.1 General sources

Many texts are available which are relevant to the material in this module. These texts may also go beyond the scope of this module, but usually include introductory chapters on the basic topics.

When reading these texts it is useful to consider the principles being as well as the details of their application in a particular environment. Also, it is important to recognise that as the environment changes the relative importance of issues may also change.

Other sources of information are also available. For example, in many countries there is an insurance institute of some form. The Chartered Insurance Institute (CII), based in England, provides a range of good educational programs and has links to more than 70 other insurance institutes worldwide (see 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 informationWeb: www.iaisweb.orgEmail: IAIS-Implementation@bis.org