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Enhancing Reinsurance

A handbook for Life & Health

By the Life & Health Reinsurance Working Party

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Abstract

The fundamental purpose of this paper is to help practitioners make informed decisions with respect to the development and implementation of reinsurance strategies and frameworks. The discussion starts by exploring what an insurer's objectives are, addresses the application of quantitative and qualitative methods towards achieving those objectives, and provides practical discussions around processes, structural features, treaties, and governance for maximum enhancement.

Keywords

Reinsurance, Life & Health, Optimisation, Profitability, Volatility, Solvency, Risk, Capital

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The authors welcome feedback on this paper. The preferred point of contact can be found on the Working Party's page on the Institute and Faculty of Actuaries website at:

https://www.actuaries.org.uk/practice-areas/life/research-working-parties/life-reinsurance

0. Introduction

Insurance …

The purpose of an insurance company is to help its policyholders manage uncertain future financial risks. It does so by taking on those risks, pooling them to achieve diversification, and earning a return on the capital required to back the business.

The taking on and maintenance of these risks should be done in a way that the business remains a going concern (and thus able to meet its policyholders' needs) for many years into the future, with a very high probability.

During this time, and in all the various processes that make up the insurance business, the insurer will employ many tools for selecting the target business, designing and pricing suitable products, marketing and selling the business, and managing the portfolio during its period of existence.

… and Reinsurance

Reinsurance is a very common and indeed powerful tool that insurers can use in many parts of the organisation, and is the focus of this paper.

The reinsurance strategy and framework of any insurer may have a significant impact on its ultimate performance, its business and risk profile, its capital position, and its ability to remain solvent and grow and thus continue to meet its policyholders' needs well into the future.

To that end, this paper considers both a holistic framework for, and the various elements of, the reinsurance strategy and implementation. While the paper is likely to be of particular interest to the purchasers and managers of reinsurance, it should also be of interest to a wide range of parties with an interest in the financial and risk management of both insurers and reinsurers.

Although we highlight a number of areas where we have observed that decisions or processes may be sub-optimal, this is done to provide a resource that will allow the use of reinsurance to be enhanced. We do not imply (nor do we believe) that reinsurance is fundamentally flawed, either in how it is bought or sold.

The purpose of this paper

The authors ("we") are members of the Life Reinsurance Working Party of the Institute & Faculty of Actuaries (hereafter referred to as the "Working Party"). The Working Party was established by the Life Board of the Institute & Faculty of Actuaries.

The fundamental purpose of the paper is to help practitioners make informed decisions with respect to the development and implementation of reinsurance strategies and frameworks. Working Party members have worked or are working in reinsurance as technicians, purchasers, sellers, intermediaries, and consultants. We have tried to make the content more relevant by illustrating with real life examples where possible, drawing on publicly available information and our experience as appropriate.

We have not tried to be exhaustive in our coverage, which would in any case be impossible given the extent and pace of evolution in the insurance and reinsurance markets and their regulatory frameworks. We have also chosen not to define reinsurance, nor to summarise its global scale or reach.

However, in relation to designing, implementing, and managing an optimal reinsurance program, we believe that common themes often emerge, and that readers will find that the ideas explored in the paper have applicability in a range of situations.

Throughout this paper we will refer to insurers and reinsurers, although of course reinsurers can retrocede business outwards too, and the same principles would be expected to apply. The differences are highlighted when material.

We hope that readers with varying levels of experience and expertise in reinsurance will all find something of benefit in the paper.

While there is value in reading this paper from cover to cover, the reader should generally be able to read individual chapters on a stand-alone basis, if required. This necessitates that some repetition appears in the text.

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1. Clarity on The Insurer's Objectives

Introduction

This chapter explores the setting of objectives for an insurer's reinsurance strategy and implementation.

Without clarity on what the insurer is looking to achieve, there is no meaningful way of confirming whether the reinsurance is supporting that goal, through structure, optionality, cost, choice of partners, and more.

The Reinsurance Function

The Reinsurance Function refers to the people and teams who are responsible for reinsurance, regardless of whether it's all or just part of their role.

While this includes the management of reinsurance treaties and relationships, insurers should also ensure that reinsurance supports the insurer's wider objectives and initiatives, including its obligations to policyholders and aspirations for shareholders.

This of course requires an in-depth understanding of the financial, risk and business objectives of the insurer, as well as the external constraints that the insurer needs to operate within, including regulatory, legal, tax and competitive.

In the wider context, the Reinsurance Function should consider the objectives of the local insurance subsidiary, the regional function, and of the group, if appropriate. Indeed, reinsurance should integrate with the insurer's overall risk strategy, Enterprise Risk Management framework, Capital Management and Liquidity policy, and other requirements set by the Board.

All insurers should have a formal reinsurance strategy, regardless of whether it's a regulatory requirement, as it is in Europe and in Australia, for example.

The Reinsurance Framework

In this paper, reference to the Reinsurance Framework includes all of the reinsurance strategy, reinsurance implementation and reinsurance management.

Insurers do not have a fundamental need for reinsurance of itself. What they need is risk management, capital management, and often, access to reinsurers' tools and services. Insurers have objectives which are based on obligations to policyholders, shareholders and staff, and reinsurance should be part of their approach to achieving these objectives.

The insurer should therefore understand the purpose, benefits, impacts, associated risks and limitations of reinsurance, before implementing any new arrangement, or amending or terminating an existing one.

The insurer must be able to demonstrate how the Reinsurance Framework supports the short-term and long-term objectives of the insurer and be consistent with how the insurer is managed overall.

Insurance risk mitigation

Traditionally, the primary purpose of reinsurance was the mitigation of risk in accordance with the risk strategy of the insurer. This may include managing P&L volatility (resulting from outcomes of the insured risks such as mortality, morbidity, longevity and lapses), or protecting or enhancing the solvency and financial strength of the insurer. Risk mitigation encompasses uncertainty on new risks, volume-related uncertainty, trend risk, risk correlation, accumulation risk, and more.

Not only does it make sense that the Reinsurance Framework should fit within the existing Enterprise Risk Management (ERM) framework, but this is often a statutory requirement under governance regulations.

For example, Article 44 of the EU Solvency II Directive requires the risk management system to cover reinsurance, with further requirements given in Article 260(1)(g) of the Solvency II delegated regulations. EIOPA guidelines on systems of governance requires the risk management policy to cover the level of risk transfer, kinds of reinsurance, principles for reinsurer selection, credit monitoring, assessment of effective risk transfer, consideration of basis risk and liquidity management procedures appropriate for the undertaking, given its risk profile. Further, staying with our EU example, Article 48 of the Solvency II Directive requires the Actuarial Function Holder to express an opinion on the adequacy of the reinsurance arrangements, with further requirements given in article 272(7) of the Solvency II delegated regulations.

The above requirements ensure that the insurer is able to point to specific objectives within the overall risk management framework, and then tie the Reinsurance Framework to those objectives.

The annual planning process should also aim to identify all the risks faced by the insurer, assess them, decide which risks most actively need managing, and then make action plans available to management. This information would feed into the Own Risk and Solvency Assessment, risk strategy and risk appetite. The risk appetite reflects the amount of risk the insurer is willing to accept within its overall capacity in order to generate the targeted profits, subject to acceptable levels of solvency. A well-defined and articulated risk appetite determines targets and limits, helps to drive the target risk profile, and helps to decide whether to implement risk mitigation actions (including reinsurance). This is usually supported by stress and scenario testing so as to test the appropriateness of the proposed actions. For example, key financial outcomes will be measured both before and after reinsurance, to be able to demonstrate that the Reinsurance Framework does indeed support the company's objectives.

Other possible objectives for reinsurance

The Reinsurance Framework can also contribute to other objectives, including:

- Support business development, innovation, and product design by giving access to reinsurers' knowledge, services, and product expertise
- Access the reinsurers' underwriting and claims management capabilities (and supporting technology)
- Optimise various metrics around profitability, volatility, solvency, liquidity, and more
- Reduce the statutory capital or risk capital requirements
- Enable business lines or individual risks to be written outside the usual risk profile approved by the Board, taking into account the nature, size, duration, and concentration of the risk
- Access asset management capabilities
- Transfer market risk off balance sheet, especially in the presence of asset guarantees
- Accelerate value extraction, and improve free surplus generation
- Get access to reinsurance capital as an alternative to financial markets, including to finance new business, purchase blocks of existing business, enter into joint ventures, fund or facilitate acquisitions, deal with run-off blocks
- Alleviate administration effort, or accounting and tax strain
- Facilitate a recovery plan following adverse events (one-off, or over a period).

The above objectives are usually associated with external reinsurance arrangements, although there are also possible objectives for intragroup reinsurance arrangements such as capital transferability, multinational diversification, and territorial efficiency.

Overall, the reinsurance strategy should embody what the insurer is targeting with the implementation and renewal of its reinsurance program.

The risks of reinsurance

While we've listed many reasons above why reinsurance might be sought in the first place, an insurer should be aware of, and seek to avoid, mitigate, or manage, risks or costs that might result from the reinsurance program:

- Ceding away profitable business
- Additional costs of reinsurance eg. administration, resources, accounting, monitoring, reporting, legal, etc.
- Introduction of counterparty credit risk
- Inflexibility when terminating or recapturing reinsurance contracts
- Re-pricing when experience starts to deviate from priced, in either direction
- An economic disconnect occurs between the regulatory and accounting treatment
- Treasury and cash management, investment management and collateralisation

- Introduction of contractual and legal risk and other reinsurance-specific risks.

Inefficiencies

Between the two outcomes of reinsurance either adding net value, or producing costs which outweigh the benefits, there is the middle ground of reinsurance merely being inefficient.

We note a few examples where reinsurance is not adding as much value as possible:

- Non-optimal reinsurance, for example where inadequate effort was made to determine whether quota share or surplus reinsurance would be a better structure
- Lack of alignment of reinsurance strategy to some or all of capital management goals, product development skills required and underwriting & claims philosophy
- Lack of dynamism of the reinsurance strategy, and an inadequate review of the existing program
- Lack of reinsurance-related management information, which would limit future decision-making for the insurer
- Herd mentality, where reinsurance is aligned with what other companies are doing, ignoring the specifics of that insurer
- Considering reinsurance only from a bottom-up perspective, for example only considering what reinsurance is needed for each new product, without looking at how that new treaty fits in with the rest of the reinsurance program, and then the company's wider objectives above that
- Allowing the current reinsurance program to perpetuate how reinsurance is bought in the future
- Implementing long-term reinsurance arrangements with no meaningful exit option or reviewability clause.

The reinsurance operating model

A clear articulation of the reinsurance objectives is the first step for the design of an effective Reinsurance Framework. Notably a complete and coherent operating model should allow an insurer to provide:

- An understanding of how the reinsurance strategy supports the overall objectives and management of the insurer
- Clarity on roles and responsibilities of the various teams on reinsurance operations
- Appropriate involvement of internal and external stakeholders (through the reinsurance governance system)
- Mitigation of any risks (legal, counterparty, operational) attached to the reinsurance activities
- Appropriate processes and controls, regular reviews of the existing reinsurance arrangements, and feedback if there is any disconnect between the various ERM

strategies and reinsurance programs (including counterparty credit risk, concentration risks, consistency with the derivatives risk framework)

- Appropriate management information, which means that the insurer should have a set of metrics clearly defined, prioritised and used effectively to drive its business. It can then structure the reinsurance arrangements prior to implementation and then dynamically measure and assess their performance to ensure alignment with its objectives and the Board's interests
- Compliance with the regulatory, accounting, tax and other legal requirements
- Capabilities and tools, including the quality and appropriateness of the reinsurance data & analytics, modelling and calibration.

A dynamic approach to reinsurance strategy

The approach to reinsurance should be documented in an overarching Reinsurance Framework, regardless of whether this is regulated or simply best practice. Ideally this should be reviewed regularly to reflect the economic situation, reinsurance market cycle and current market dynamics. It should also be reviewed following significant regulatory and/or accounting changes such as Solvency II and IFRS17. A well-defined updated Reinsurance Framework helps make sure that the new and existing reinsurance arrangements are appropriate and can be measured against a formal documented strategy.

Conclusion

Without complete clarity on the insurer’s overall risk framework, risk appetite and key metrics, it cannot determine the optimal reinsurance program, nor measure the performance of the Reinsurance Framework against all other frameworks, guidelines, and objectives.

As we discuss in the paper below, we believe that many life & health insurers run an incomplete Reinsurance Framework which is, to various degrees, disconnected from the overall risk framework of the company. This can result in mistakes and inefficiencies, and it is our hope that this paper will highlight these gaps and enable improvements in this space.

2a. The Need for Reinsurance (Qualitative)

Introduction

The benefits of reinsurance are either qualitative (like access to services) or quantitative (perhaps an improved return on capital). We begin our discussion looking at the qualitative benefits.

As highlighted in the previous chapter, unless an insurer has a formal process for regularly looking at what they are trying to achieve and what benefits are possible from reinsurance (and of course, how these overlap), then there is the risk that reinsurance will have become a habit, and no longer a deliberate tool. Indeed, the design of the current reinsurance program could be reflecting the needs and features of the company's business environment many years in the past.

As actuaries, no doubt we are comfortable making calculations and comparisons around a quantitative framework, whereas producing a needs analysis based on qualitative factors is potentially harder. Certainly, comparing reinsurers and reinsurance structures on a qualitative basis comes with its own set of challenges, and alternative sourcing of the same benefits must also be considered.

In this chapter we identify some of the qualitative benefits from reinsurance, and we discuss how they might be incorporated into a Reinsurance Framework.

The real drivers

Previously we listed a number of reasons why reinsurance might be bought, including both qualitative and quantitative objectives.

Qualitative factors include access to product development and pricing support, source of new product innovations, access to services like underwriting and claims support, and the use of proprietary technology. Factors like strong insurer/reinsurer relationships and the convenience of simply repeating what was done before are also qualitative in nature.

Often, companies convince themselves that they're making quantitative decisions (because they always choose the cheapest reinsurer, for example) without appreciating that the qualitative factors are dominating their decisions (in terms of which reinsurers they approach, what structure they ask for, or setting retentions at the same level as last year).

As we will see in the next chapter, this could produce a reinsurance program which is far from optimal, in spite of it being placed with "the cheapest reinsurer".

Qualitative overlaps with Quantitative

Again, while our focus for this chapter remains the qualitative benefits, we note that there can be an overlap with quantitative factors in several ways.

For example, consider counterparty credit risk:

- When amounts are due from the reinsurer then there is a credit risk, since an insolvent reinsurer may not be able to meet its obligations, leaving the insurer in a net loss position
- The *qualitative* angle is that an insurer may not want any reinsurer credit risk exposure, and will seek to design a program that completely eliminates it
- Similarly, deciding on a minimum credit rating of any reinsurer on the program (for example, they must be at least S&P A+) could be seen as *qualitative*
- But from a *quantitative* perspective, we might look to determine how much counterparty risk is acceptable (referencing expected loss or maximum probable loss, for example), and what an acceptable price/risk trade-off might be.

Similarly, consider access to actuarial pricing support from a reinsurer:

- This is largely *qualitative* – we may make decisions on which reinsurers have strong skills and resources in this context, and then decide to only use those that meet the required standard
- On the other hand, insurers could use systems of rating reinsurers' pricing and design skills, thus moving it into the *quantitative* space
- And at the very least, an insurer should consider the cost of hiring or developing the equivalent resources (actuarial, underwriting, marketing, tech – or whatever is being made available), in order to compare that to profits foregone in part to access those resources. This creates a *quantitative* measure of a *qualitative* decision.

The "cheapest price" is similarly not only a quantitative measure:

- When insurers tender a new product for reinsurance, they might decide to cede to the reinsurer with the lowest price
- This is not necessarily a purely *quantitative* approach, because it ignores how they set about choosing which reinsurers to approach in the first place, which may have been a *qualitative* process
- For example, all parties invited to tender may have been expected to provide significant actuarial support in designing and pricing the new product
- Therefore, you could consider this to be a primarily *qualitative* decision, with secondary *quantitative* factors.

Stress-testing is another example of a process that isn't completely qualitative:

- If a company is doing a 1-in-200 pandemic stress test on mortality, and the actuaries have determined that this is represented by a +1.5 per mille addition to mortality, then that is a *quantitative* framework
- But if companies are testing a "Japan 1989" scenario, or a "COVID-19" scenario, or a "major regulatory change" scenario, then the choice of *which* scenario to use is actually qualitative, and indeed the decision of how to interpret the results (we must survive this scenario *versus* how solvent are we after this scenario?) is a *qualitative* decision – even if it drives an effort to quantify something.

Having now clarified that qualitative and quantitative are not totally independent, we will now focus this discussion on the qualitative aspects of building a Reinsurance Framework.

Potential Considerations

Questioning the current arrangement

Based on needs identified in Chapter 1, an insurer should look at which qualitative factors are already part of the existing Reinsurance Framework, and what has to change to ensure those qualitative needs will be met.

In terms of using reinsurance as a way to access technical expertise from the reinsurers, the following questions might arise:

- Have the insurer's actuarial and other technical capabilities grown since the last review, and can they afford to use other reinsurers who don't offer the same degree of support, but who can offer risk transfer at attractive prices?
- Have the insurer's underwriting and claims skills developed since the last review, so that there is less reliance on reinsurer input, and perhaps retentions can be increased to take this into account?
- Does the insurer now have enough of its own data to be able to price at least as accurately as the reinsurer would for the relevant products?
- Conversely, are there portfolios which have not been performing as expected, so that bringing in more reinsurance expertise could add value even at the expense of ceding additional risk profits?

Further, the insurer would need to consider the changing circumstances of the industry, such as laws, regulations, tax, and the political environment. For example, in Australia the Regulator has been putting increasing pressure on keeping reinsurance onshore.

Deriving a financial framework

In reviewing the *qualitative* decisions to be made, ensure that you specifically address those that underlie the *quantitative* framework. Key examples include:

- The company might be using VNB (value of new business) as their primary metric when determining what is "optimal" for pricing products, but does this make sense? Is it consistent with the explicit goals that the Board has stated it is aiming for, companywide?
- Should volatility be measured by 1-in-3 scenarios, 1-in-10, or perhaps 1-in-20, and why? Once the decision is made then it becomes a matter of measuring performance against that, but the decision itself is largely qualitative.
- Should the company use return on risk-adjusted capital, or risk-adjusted return on capital, or risk-adjusted return on risk-adjusted capital? Should risk take VAR (value-at-risk) or Tail-VAR into account? Again, it's a qualitative decision that then drives a quantitative framework.
- When using capital in the denominator, should it be risk capital, regulatory capital, or ratings capital? What is most suitable currently, and how consistent should the insurer be in sticking with the same metric?

And for reinsurance specifically:

- If a particular treaty worsens dollar-profitability while improving return-on-capital profitability, which should dominate? Is this clear from the company's overall objectives? This choice is a qualitative point.
- If another treaty worsens profitability while improving the retained risk profile, how should the treaty be judged? Is this a qualitative decision that needs to be made for reinsurance specifically, or is this driven by the wider financial and risk framework of the company?

It is vital to continually assess the financial impact of the reinsurance arrangement. Reinsurance affects capital, reserves, profit, and volatility of income (see Chapter 2b for further details). Reinsurance is therefore a major tool for an insurer to obtain efficiencies.

There are also wider issues at play. Choosing the wrong type or level of reinsurance can affect the insurer's financial strength materially. Conversely, appropriate reinsurance can generate benefits such as access to cheaper capital due to the reinsurer's pooling of risk and diversification.

Therefore, the insurer should consider the profitability, solvency, and volatility of the before- and after-reinsurance metrics to find the point where the arrangement is most efficient, based on these pre-agreed corporate metrics.

Perhaps these qualitative aspects can be seen as "hygiene factors" that are over-arching relative to a quantitative framework.

Who is responsible for reinsurance?

It must be determined who gets to make decisions regarding the Reinsurance Framework.

This will vary by insurer, and could be a dedicated team, or might reasonably fall under the responsibilities of another department. Being clear about such responsibilities helps ensure that a framework is created, and decisions are made, which are "optimal" (however that insurer has chosen to define it).

Since this paper is about the enhancement of reinsurance, it's worth noting that insurers need to ensure that the group or person with ultimate reinsurance responsibility is senior enough to understand the issues, to engage with a wide-enough group at the company, and be able to influence decisions across many conflicting preferences.

What does Senior Management want?

The Board and Senior Management both regularly refine the insurer's risk appetite and strategy. The need for reinsurance will depend on how it aligns with this steer.

A situation may occur where direction is given before the detailed outcomes of a refined strategy can be understood. Sometimes the reality of the reinsurance available might lead to outcomes that were perhaps not envisaged when the instructions were given.

A decision maker may insist – *qualitatively* – that reinsurance rates have the same guarantee as the rates for policyholders. This is different to insisting – *quantitatively* – that rate guarantees must exist to reduce IFRS17 volatility where contract boundaries play a role.

Does the cost outweigh the benefit?

As described earlier, there are costs and benefits, downsides and upsides, that come with any reinsurance program.

Maintaining a treaty requires resources which include operations, risk management, created risks, managing collateral and trusts, valuations and finance, amongst others. This can be expensive, and needs to be costed in, both at inception and on an ongoing basis.

In a one-dimensional sense, a reinsurance treaty adds value if the resulting value, however measured, exceeds the costs of operating that treaty.

In considering whether having lower capital and reserves outweighs the cost of profits foregone, an insurer needs to consider whether the initial objectives are met, and how important this is.

Over time, experience trends, competitiveness of reinsurance, and other changes to the industry and the locality, will also shift the balance between qualitative and quantitative factors, and thus the Reinsurance Framework needs regular review.

Contract wording

The wording of the treaties that govern the various reinsurance arrangements will be very important to take into account.

The treaty needs sufficient controls and tight wordings to ensure the agreement entered into reflects exactly what was intended, as mistakes here can be costly. For example, tight control around data corrections and compliance is vital for a longevity swap contract, as is clear wording on how to deal with optional increases in cover on a protection book.

Being clear about why you need reinsurance makes drafting the wording easier with appropriate clauses.

Historically, the treaty wording usually originated with the reinsurers, and that documentation evolved over time. At any point, an insurer will have a large number of contracts, each of which has a different set of obligations and requirements. Even if, moving forwards, a company is clear on how the wording needs to be expressed to meet their expectations of what is optimal, the reality is there are probably many other existing treaties which don't use that wording. Nowadays many larger companies insist on using their own treaty templates as a starting point, which reduces issues with analysing and understanding the nuances of each reinsurer and their legal teams.

Continually assess current and future arrangements

Once a treaty is in force it is important to regularly assess its use and what can be done to make it more efficient. The original aim should always be kept in mind because if that's not being achieved any more then there will be an urgent need to review treaty terms.

Conclusion

When setting up or reviewing a Reinsurance Framework, it's essential that a company has a deep understanding of the qualitative factors which drive or at least influence the final outcomes.

This should include both what the companies needs in terms of its previously-determined objectives, as well as what is available in the market.

It is important to highlight again that, just because a factor is largely qualitative, that doesn't mean it isn't driven by something quantitative, or doesn't in turn drive quantitative results, or indeed that there shouldn't at least be some effort to quantify its value.

All of this is part of a solid process to determine a suitable Reinsurance Framework.

2b. The Need for Reinsurance (Quantitative)

Introduction

We have already explored some of the qualitative aspects of making reinsurance decisions, and we now progress onto the quantitative aspects. As we've seen, there is overlap between these two perspectives, but our focus will be only on the numerical framework in this chapter.

In this context, we go beyond the narrative of why reinsurance is being bought and look to create a model to show that reinsurance is adding "value" (which we have yet to define). We also consider how to determine the optimal reinsurance treaty, looking at the basic reinsurance types (quota share vs surplus), the chosen retention, and certain features.

There are many ways of developing a quantitative approach, and additional perspectives can be found in the Appendix of this paper. For the purpose of this chapter, we are taking into account three primary vectors or dimensions, whose outcomes will be modelled.

The Three Vectors

To begin this exercise, we look at what we mean by the generic concept of "value", since that is the basis for determining what is optimal. Unfortunately, the actuarial world can be rather complex, and there isn't a single measure that is all-encompassing. We have distilled the many measures of value down to three so-called "vectors", each of which responds differently to reinsurance. Additionally, we need to be clear on how to prioritise these vectors so that "optimal" can be determined. Each of the vectors needs to be considered both pre- and post-reinsurance.

Profitability

- This is a measure of how much money the insurer is **expected** to make, modelled as the best estimate of "profit"
- Even within the concept of Profitability, there are many possible variations, and it's up to each insurer to determine the measure they intend to focus on. It might be VNB (value of new business, an EV measure), IFRS17 profit, IRR on the reinsured portfolio, or RoC (return on capital), or other
- A decision will also have to be taken on other refinements, for example whether it should be based on pre-tax or post-tax numbers
- And of course, different measures of Profitability can behave differently – a reinsurance treaty might increase RoC at the same time as it reduces expected IFRS17 profits, so clarity on exactly which KPIs are of interest is important
- *In summary, this is a measure of the insurer's expected result (in an average year)*.

Volatility

- This looks at the **potential variation** in results for an insurer
- Again, different companies have different target measures for volatility
- This might be seen as a 1:3, 1:5, 1:10 or 1:20 adverse outcome, as extracted from your stochastic simulation of the portfolio
- As with Profitability, we can measure volatility in any of your metrics: IRR, IFRS17 profit, new business embedded value, etc.
- *In summary, this is a measure of the result in adverse circumstances (in a bad year)*.

Solvency

- For this vector, we are considering the strength of the **balance sheet**
- Each insurer will have its own metrics driving the Solvency vector, including solvency ratio, absolute solvency capital, ratings capital, or any other variation
- As with the previous vectors, there are many possible sub-variations within the chosen measure that are possible. For example, do we mean solvency ratio on a Solvency II balance sheet or on an internal economic capital balance sheet or on an S&P balance sheet? Are we focused on VAR[1] (value at risk) or Tail-VAR[2]?
- Although we appear to have moved from P&L to balance sheet, given how Solvency II and many other solvency regimes talk about holding enough capital to withstand 1-in-200 stresses, you can see that this vector could simply be a 1-in-200 stress of the results extracted from the stochastic simulation
- *In summary, this is a measure of the results in the extreme (in the worst year envisaged over 200 years)*.

Optimisation of the Vectors

In dealing with multiple vectors, there is no such thing as an absolute optimum, as there is usually a trade-off between vectors. We therefore need to be clear on what each means, and how they interact.

- Profitability is usually about *maximisation* – trying to ensure the insurer makes as much money as possible. As more risk is usually needed to get higher returns that leads on to …
- Volatility is usually about *management* – not maximisation (because that could start to threaten the Solvency position), and not about minimisation (because that often passes on too much Profit). For the purpose of modelling the *management* of Volatility, the most common approach is to use the insurer's Risk Appetite Statement to determine what is the largest amount (or the biggest hit to RoC, for example), that the insurer would tolerate losing once every, say, 10 years. Then we can model

[1] VAR is the estimate of the expected loss at a given tail probability
[2] Tail-VAR is the expected loss from a given tail probability and beyond

multiple reinsurance structures and eliminate anywhere the 1:10 scenario produces a result worse than this. By the same token, any reinsurance structures which leave the insurer with "too little volatility" (with the consequent reduction in Profit) should potentially be avoided

- Solvency is usually about "*subject to*" – we're certainly not looking to minimise Solvency, and unfortunately maximising Solvency means tying up too much unproductive money, so that is not ideal either. Simply *managing* Solvency is also not good enough, because although we might have an acceptable range of Solvency outcomes, it needs to be floored below to avoid crossing into technical insolvency, or some other limit imposed by the Regulator or the company's own internal governance. Therefore, insurers would model this by managing Solvency *subject to* not falling below a certain point (technical insolvency, regulatory trigger point, etc.).

The above is sometimes summarised in the Chairperson's statement within an insurer's financial reports, which may include something along the lines of, "Our goal is to maximise shareholder profits whilst managing volatility, subject to remaining solvent in all foreseeable scenarios."

Our goal in setting up a quantitative framework is to find whatever reinsurance structure takes the insurer closest to its chosen objectives.

It may be computationally prohibitive to try evaluating all options available to the insurer. That said, with careful planning before the exercise, a limited number of structures could be identified which could give a strong direction to the reinsurer about what needs to be changed and what needs to be included.

Stochastic vs Stresses

Our description of this quantitative framework is based around a stochastic model, which allows us to determine what a 1:10 or a 1:200 outcome, for example, looks like.

As part of the exercise, though, it's worth looking at stress tests too.

For example, the 1:200 scenario might reflect statistical deviations of mortality, persistency, and interest rates, but might not adequately allow for the possibility of an extreme pandemic. To this end, a specific pandemic scenario might be modelled as an additional 1:200 outcome.

This may help us discover, for example, that while a quota share works well under stochastic outcomes, it provides inadequate protection in a pandemic. Or perhaps a surplus treaty might generally be seen as preferable, but a pandemic stress that hits the lower socio-economic groups harder will leave the insurer with negligible reinsurance support.

Prioritisation of the Vectors

Once we are clear on how to optimise mechanically, we then need to move on to how to prioritise. There is of course no single way of doing this, since it depends on each insurer's own circumstances. These examples are intended to highlight how prioritisation is key to the process, but most cases will require a focus on all three priorities to varying degrees.

- For an insurer wanting to maximise profit, but seeking reinsurance because they are worried about adverse experience from a new product, they might focus primarily on maximising the Profitability vector, while ensuring the results from the Volatility vector don't deviate outside their risk appetite (however they choose to specify that), paying little attention to the Solvency impact of this portfolio (perhaps it is small relative to the insurer's solvency capital)
- Or an insurer might be facing a ratings downgrade, so they would look at ratings capital as their measure of the Solvency vector, eliminating any reinsurance structure which allows that to fall below whatever target level is required to maintain their current rating. Then within this universe of outcomes, they would seek to keep Volatility within their risk appetite, and only then would they look to maximise Profitability
- After a bad year, an insurer's CFO might make a commitment to shareholders that they won't have another bad year where they lose more than £50m. To the extent that reinsurance plays a part in this, a modelling exercise would focus on Volatility as the priority, not allowing outcomes (over, say, a 10-year time horizon) that have losses in excess of £50m, even if it means taking a hit to their Profitability vector by using a lot more reinsurance.
- Elsewhere in this paper, we talk about the importance of engaging the right parties internally when designing a reinsurance program, to ensure all views have been taken into account. This can be expressed in terms of vectors, using an anecdote from one of the authors who was consulting on a financing deal with the head of product development. The goal was to implement reinsurance which reduced new business strain, thus increasing the new product's return on capital, making it possible to exceed the required hurdle rate of return, using premium rates that were market competitive. In other words, we were looking to boost their Profitability vector. Unfortunately, appropriate engagement of the right parties was not in place and only after considerable work did the deal arrive on the desk of the Chief Actuary for sign-off, which was refused. From his perspective, they already had excess capital, and his job was to manage the unproductive capital downwards, which meant he was prioritising the reduction of the Solvency vector. Doing a new business financing treaty would have made things better for the product actuary's Profitability vector, but worse for the Chief Actuary's Solvency vector. For this insurer, the management of excess solvency capital downwards was the overall company's priority, and so the deal never happened.

Not just one Vector

One of the interesting aspects of our discussions as a Working Party was noting how often an insurer made its reinsurance decisions on just one of the vectors (or primarily on one of the vectors). This was problematic for a couple of key reasons: the fact that the vector they were using was not always the insurer's most important dimension to be optimised, and the fact that by ignoring the other two vectors, the outcome was missing key impacts (positive or negative).

The following examples illustrate this point:

- An insurer might decide not to buy reinsurance simply because they see reinsurance as an expense. This puts 100% of the focus on Profitability and ignores the benefits of Volatility management, Solvency management, and all the qualitative benefits discussed in the previous chapter. Even if we ignore the other vectors for a moment, the belief that reinsurance is an expense suggests that Profitability is a money-based vector (like IFRS17 profit, or GAAP profit), when in fact an insurer's primary Profitability targets could be percentage-based, like Return on Capital, or Return on New Business Embedded Value. And in that light, perhaps reinsurance actually improves Profitability for the insurer, even if they end up making a lower absolute level of profits.
- An insurer might decide not to buy catastrophe cover which protects against severely adverse outcomes (i.e., the primary benefit will be on the 1-in-200 Solvency vector) because they have an extremely strong capital position. While this makes sense from a Solvency perspective, it again ignores the other two vectors. For example, that insurer, because it's not reinsuring cat events, might have to hold capital against such extreme outcomes, and the cost of capital represents a reduction in Profitability. At that time, the reinsurance market might be very competitive and the reinsurance premium to take such risks off the balance sheet could actually be based on a lower cost of capital than the insurer's. Therefore, even if they don't *need* cat cover for Solvency purposes, it could still benefit them from a Profitability point of view (which might even be their primary vector).
- Another insurer might have a 30% quota share in place, mainly because they want to limit adverse outcomes to a certain level. An alternative could be to implement a surplus-style treaty with a level of retention such that they still end up reinsuring around 30% of the business, but because a surplus treaty provides even greater protection against adverse experience amongst the largest policies, they may find through their modelling exercise that they could raise their retention, perhaps to the point where only 20% of their total volumes are being reinsured surplus-style, for the same volatility reduction as they get from a 30% quota share. And, with a smaller proportion of business ultimately being reinsured, they might find this enhances their Profitability vector beyond that of the quota share (if, for example, less profit is

being passed on since less business is being reinsured overall). And of course, with the nature of surplus covers, the impact on Solvency could be greater than was available from the quota share.

Of course, none of the above is to imply that reinsurance is always desirable, or that surplus is always better than quota share. It comes down to the insurer's vectors, its prioritisation of those vectors, and the nature of the underlying business being reinsured.

The difference here that we are not using an actuary's "feeling" that a surplus treaty should give a better result, nor just accepting a reinsurer's suggestion for a quota share. Instead, we are using the results of an actual modelling exercise to demonstrate the impact of reinsurance on each vector, then prioritising them, and finally making the decision as to what is explicitly optimal, as determined by the company's circumstances.

Other Vectors

For the sake of this chapter, we have only considered three vectors, firstly because they are particularly important, and secondly because they lend themselves to well-modelled outcomes. There are of course other dimensions which could (and should) be taken into account when making quantified reinsurance decisions, including:

Liquidity

- You might be considering a reinsurance financing arrangement, with both cash and cashless options on the table, and liquidity might be an important dimension in determining the value that the treaty brings
- You might prefer, for the sake of liquidity, to receive a large up-front reinsurance commission rather than a lifetime reduction in reinsurance rates
- This can relate to either the company's overall liquidity position, or more specifically to an objective of cash generation – perhaps specifically to meet the insurer's commitment to pay cash dividends

Fungibility

- Creating capital in one entity's balance sheet may have value, but there may be additional value if that capital is deemed fungible, and can support the capital adequacy of other sister entities, or a parent entity

Time

- A reinsurance financing treaty or a sale of a portfolio would in effect accelerate some or all future profits. On economic terms, these options might be similar, but from a time-dimension point of view, it might be preferable to have that money now. This isn't captured in the three primary vectors
- An example of this is to accelerate profits to avoid writing off tax losses that are due to expire. This would have no immediate impact on the gross Profitability vector

- Temporary changes: An insurer might generally have a specific risk appetite that they're trying to optimise against, but if they've had a bad year, they might temporarily change their relative priority of vectors

Pain

- Sometimes insurers' preferences are for reinsurance arrangements that are expedient: something they've done before, easy to replicate, and hence not needing a drawn-out approval process
- While this takes us outside the quantitative optimisation into somewhat of a qualitative perspective, it remains important to be able to determine what the quantitative impact of such a decision is (for example, less Profitability or an overly-constrained Volatility), and then decide whether the Pain vector really should be taking priority over the other vectors. This will often depend on the significance of the business involved.

Some more technical points on the Vectors

There are a number of additional technical points of detail in relation to the three key vectors and these are collated below:

- A quantitative modelling exercise might begin with a portfolio listing of every policy, including the relevant risk profile (age, sex, smoker status, preferred class, etc.) and the sum-at-risk for each policy.
    - Then you run a stochastic model which produces, say, 10,000 possible outcomes, each tested with and without reinsurance (using several structures). Then you choose the optimal reinsurance program from that
    - This works fine if you're only modelling quota share reinsurance, for example, but fails when you're doing surplus reinsurance when reinsurance limits may be per-life and not per-policy
    - Consider a portfolio of 1000 *policies* where we are probably not dealing with 1000 different *policyholders*, as some people will have two or more of those 1000 policies. So, if a policyholder holds four policies of £100,000 sum-at-risk each, and if there is a 50% quota share, then each policy is effectively half reinsured. But if the reinsurance is on a surplus basis with an excess of £100,000 per life, then when that person dies, one of the policies will be fully retained, while the others will exceed the surplus limit and thus be fully reinsured. Surplus reinsurance (if written per life) is thus more effective in reducing volatility for a portfolio where policyholders hold more policies per person than a portfolio where there is just one policy per person
    - The impact of this can be significant, both on the actual result as well as on the effort required to produce the result, and thus a decision will have to be taken as to which approach is preferred

- When we're modelling losses (negative Profitability vector) we need to be careful about how we define that, to be relevant to the specifics of each portfolio:
    - For example, consider a term portfolio with fine margins. In a good year you make profits but in a bad year you make actual losses (where claims might, in the extreme, exceed premiums). This is intuitive to model
    - But now consider a unit linked portfolio, where the insurer makes money through fund management charge margins. Of course, as the underlying asset values go up and down, the change in asset value will accrue to the policyholder not to the insurer, who makes money by charging 1.5% (for example) for asset management of the policy, but where it only costs the insurer perhaps 0.5% of AUM to actually perform that service
    - Their margin is thus 1% of AUM (1.5–0.5). In a good year they make 1% of a large AUM, and in a bad year they make 1% of a smaller asset base – but (ignoring extremely bad years) they would always expect to make money
    - Here, trying to model and manage *losses* isn't actually helpful. The downside is not an actual financial loss, but it's a loss *relative to an expected level of profits*. Again, the insurer needs to be clear on how the vectors are defined before embarking on an optimisation process
    - For the purpose of reinsurance optimisation, while the above might be how the insurer looks at "losses", we then need to look at how the definition should be changed (if at all) to be relevant to reinsurance
    - The above unit linked example might be more relevant to a VIF acceleration treaty, and less so for a pure mortality cover
- It's worth making a couple of brief points about mutual insurance companies:
    - This enhancement exercise applies equally to them – reinsurance can be used as a tool achieve their objectives
    - That said, they could have a different set off financial objectives that they're trying to optimise. For example, you most certainly wouldn't expect to see Return-on-Equity in their KPIs, so instead RoC might be used
    - To the extent that their risk is dominated by smoothing investment bonuses on par portfolios, for example, reinsurance may play less of a role overall.

Constraining the Model

Before going into detail, here's an anecdote from the author's time as a first-year actuarial student, doing basic mathematics-of-finance calculations.

> *I remember doing cashflow examples where I worked out that a deal was worth £100 using best estimate interest rates.*
>
> *I also was told to do sensitivity testing, and so calculated that if we could earn +1% it would be worth 110, and if we could only earn -1% then it would be worth 92. But I never knew what to do with this information. So what? So, what if I could only earn*

92? Is that enough? I mean, I'd rather earn 100 of course, but 92 doesn't sound so bad. Or does it?

However, I realised years later that I was missing information. Rather than just having the results of the sensitivity tests, I should also have statements which say something like "The CFO won't sign off a deal whose value falls below 95 if investment returns fall by 1%" or "The Chief Actuary won't accept a risk that has more than a 10% chance of producing a 10% lower result".

Sensitivity testing has limited value without constraints.

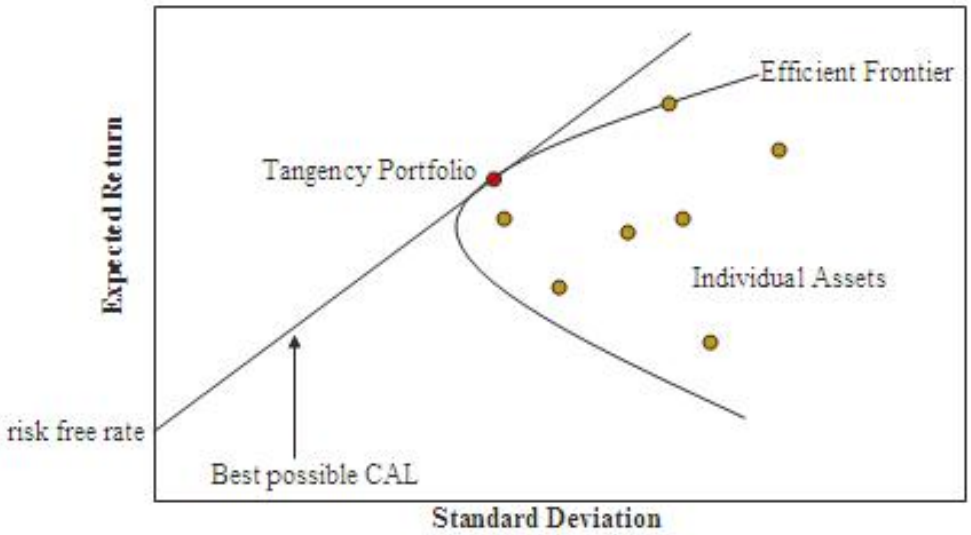
And it's the same with the quantitative modelling we do when finding an optimal reinsurance program. Should we care that a surplus treaty might produce a lower volatility than a quota share? Is it attractive to us that a certain surplus treaty increases the dollar profit measure while reducing the RoC profit measure, relative to a surplus treaty with half the retention?

Unless we have constraints to apply to our model, we have no way of answering the above questions. How much is enough? How much is too much? But in spite of the fact that this is an essential step in producing optimal reinsurance (and optimal ALM, and an optimal overall risk framework) it's surprising how often this step is skipped. Indeed, many risk appetite frameworks don't have nearly the degree of specificity required to produce a meaningful optimum.

Of course, all insurers will, when doing their valuation or pricing, show results net of reinsurance, but fewer will also do a before-reinsurance analysis, and fewer still will test several after-reinsurance structures. This is an essential part of finding optimum reinsurance, but it is only the first step. Keep in mind that simply modelling multiple reinsurance structures, and measuring the outcomes against a set of vectors, cannot be the end point of our exercise.

Modern actuarial software can easily model multiple outcomes against multiple reinsurance scenarios. The real value comes in comparing the results to the constraints that have been imposed, rather than just noting that different structures produce different results.

A simple way of understanding this is to consider a graph which plots the risk-return datapoints for a variety of investment opportunities, the most efficient of which would appear to lie along a so-called "efficient frontier", tangential to the Capital Allocation Line.



https://en.wikipedia.org/wiki/Efficient_frontier

Investments below the curve are inefficient (in that you should be able to get higher returns for that level of risk), those above the curve theoretically don't exist, and those along the efficient frontier curve are efficient. As risk goes up, so does return, but because of reducing marginal improvements, we get a curved graph which shows that the higher risk gets, the less we get rewarded for that increase.

As mentioned, while anywhere on that curve is deemed to be efficient, in order to find the *optimal* risk-return point on that curve we have to *constrain* the model – it's that line, anchored at {0, risk free}, which identifies optimal as being where the reference line is tangential to the efficient frontier.

In principle, this is the same as what we need to do in our quantitative assessment of reinsurance. In multiple dimensions we need to find that optimum point, and the constraints we apply to achieve this come down to our Risk Appetite Statement, which we've discussed previously in this paper.

Within the Risk Appetite Statement, we will find our three T's:

- *Targets*: this is what we're aiming for. For example, we want reinsurance to help us achieve a target Profitability (RoC, perhaps) of x%, or our target Solvency (could be a solvency ratio) of y%
- *Tolerances*: although we have a target Volatility of £z, our tolerance around that might be ±£w
- *Thresholds*: there may be an acceptable range of solvency ratios, but ultimately, we have to put a hard stop at 150% or at 100%, for example, because below that and the insurer ceases to operate as intended.

Consider an insurer that operates in country A, which is part of region B, which in turn is one of several regions that the wider Group operates in. There is thus the additional challenge of deciding which level of zoom needs to be optimised. For example, if you're looking to optimise reinsurance according to your local country risk appetite (which might be appropriate for each country doing this) when you zoom out to the regional risk appetite, you might then find yourself over-reinsured.

Group *vs* Regional *vs* Local

This segues neatly into the discussion of determining *whose* risk appetite you should be using to constrain the model. The point here is just to raise the issue, and ultimately each insurance group needs to determine solutions which are consistent with their own objectives, while also considering the merits of using intra-group reinsurance.

A simple way of exploring this would be to use catastrophe reinsurance which offers protection against events which result in many deaths or disabilities, like earthquakes or terrorist attacks. Consider a group that has multiple entities, from a large business unit in a highly developed market, through to a small business unit in a developing market.

Cat reinsurance can be bought broadly in two ways:

- Each country buys cat cover to meet its own needs, so the large country could have a high retention (if they have a large amount of excess capital) and also a large treaty capacity (since the impact of a large scale event could be significant), and the small country would buy a low retention and low capacity cat treaty (since they don't have a lot of spare capital to deal with such an event, but the downside in absolute terms would also be somewhat limited by the less developed nature of the market)
- This works well on a per-country basis, but when you look at the regional or the group level, the insurer has probably over-bought cat reinsurance. Firstly, cat events in different countries generally have low correlations with each other (other than pandemics), so the multi-country diversification means the insurance group probably needs less protection overall. Secondly, it's likely that the impact of a cat event in the smallest countries could easily be absorbed by the largest countries (or indeed any capital higher up the corporate chain). However, even though the small cat cover might thus effectively be unnecessary at regional or at Group, it's an essential part of protecting the Solvency vector at the local level
- Effective solutions could involve an external reinsurance company, or be between related parties within the same group.

The insurance group should therefore spend time reconciling their relative risk appetites at different levels of their structure, to determine what the right amount of reinsurance protection is, taking all vectors, and appropriate priorities, into account.

An external group-wide reinsurance program could be designed to achieve this. Or alternatively, this could involve a decision to do intragroup reinsurance from the optimal local retention level upwards, and only go externally beyond the Group optimal retention.

Let's now consider a different risk, one with a very different diversification profile to cat, such as GMXB (Guaranteed Minimum Death/Withdrawal/Maturity/etc. Benefit) risk. If multiple countries in an insurance group sell VA (variable annuity) business, we accept that for minor market volatility there would be some diversification, and the insurer might think that by reinsuring the GMXB into their head office, they could benefit from this diversification, and thus require less hedging. But the real risk for VA business is the event of a severe drop in equity prices, as witnessed in 2008. In such extreme events, there is very little diversification: all markets would be falling dramatically, and diversification offers no benefit whatsoever. This was a significant cause of massive solvency problems for at least one global insurer during the Global Financial Collapse.

This shows again how important it is to know what your risk appetite should be at the local and regional and group levels, and thus to correctly structure your reinsurance program to make sure you are managing the right Vectors to the right constraints.

On the Irrelevance of Vectors

Given how seldom life insurers use a quantitative analysis to decide on the optimal reinsurance structure, and to determine the optimal retention within that structure, it's clear that the industry in general has not made this an important part of the process.

In this regard, there is one point that is worth addressing separately.

As a Working Party, we appreciate that many reinsurance decisions will not be quantitative. In such cases the focus will be on qualitative factors such as product development and pricing support, access to underwriting manuals, etc. The insurer may decide to go with whichever reinsurer provides the best idea for a new product, with rates that are reasonable for such a product. The reinsurer may make it a requirement that a 50% quota share is their required participation in the new product. In this context, there appears to be no need for a quantitative analysis since there is no option, and thus nothing to optimise.

However, even when the decision appears completely qualitative, there are a couple of significant benefits that still come from such modelling being performed:

- If the insurer can see the impact on the Profitability vector, of going from gross-of-reinsurance to preferred-reinsurance, and then going from preferred-reinsurance-structure to 50%-quota-share (which was the "price" for the reinsurance services), then the insurer will have an estimate of the cost of that product development and pricing work. This cost may well be worth it, but it's still important to be able to quantify the gap between optimal and implemented.

- While the reinsurer may be asking for at least a 50% quota share, a quantitative approach could suggest alternatives which are similar from the reinsurer's point of view, but better for the insurer. Perhaps the modelling allows the insurer to compare the resulting vectors of a 50%-quota-share to say a 40%-quota-share-but-everything-above-250k. Perhaps we might see that the two structures have very similar Profitability vectors (i.e., the net cost of the reinsurance isn't materially different), but with a retention cap in the second structure, the Volatility and Solvency vectors could perhaps look materially better. It might thus be worth making this small change to the reinsurance structure, which may still be within the reinsurer's minimum requirements.

It therefore makes sense to always do some degree of quantitative analysis on treaty decisions, even when it appears that the decision is qualitative in nature.

Creating Risks through Reinsurance

The value of a quantitative analysis, if done comprehensively, should also allow for the fact that by reinsuring the business off the balance sheet, an insurer might actually be creating new risks.

Some of these new risks cannot really be meaningfully modelled in this exercise (like reputation risk), or might not be modelled (perhaps like reduced liquidity, if not explicitly one of your vectors). But some risks can and should be included as part of the analysis.

Counterparty Credit Risk

The most discussed item in this regard is counterparty credit risk – it's the risk that the reinsurer doesn't meet its payment obligations, most likely because it has gone insolvent. This might be a material risk in a number of structures:

- With original terms reinsurance of an endowment or whole life cover, the reinsurer gets a share of the original premium and builds up large reserves on its books
- If annuity business (in payment) is reinsured and the reinsurer receives an up-front single premium to take on this risk
- If the insurer enters a funds-withheld reinsurance financing arrangement, thus owing the capital amount to the insurer at specified future date.

In all these cases, the insolvency of the reinsurer (and thus inability to make payments), could result in material losses to the insurer. It is therefore worth noting the impact of such a risk on the Vectors.

- It could be during significantly adverse economic conditions that an insurer is most likely to need access to its solvency capital, and it's in these times that a reinsurer might be most likely to default – an unfortunate correlation

- An insurer might require that a mitigation technique is applied to the transaction to manage this risk, such as letter of credit, trust funds, collateral, parental guarantee, or others. Again, by looking at the impact of these solutions on the Vectors, an insurer can quantitatively determine which solution is best. For example, although there is a credit risk from a reinsurer going insolvent, their capitalisation or rating might be such that the impact on the Vectors of paying for collateral might be higher than the impact of simply taking that credit risk – which is important to identify
- We can express this in terms of vectors. If, in the context of counterparty credit risk, an insurer is focused on their Solvency vector, then they will definitely insist on some mechanism being put in place, with a focus on effectiveness rather than cost. But if they are focused more on their Profitability vector (perhaps for a smaller transaction), their optimisation might be based on comparing the cost of the mitigation approach, with an internal cost of retaining the risk (say, expected cost of default plus a cost of capital)
- A comprehensive Reinsurance Framework will include rules around collateralisation. This will address when it is required, how much is required and how to calculate this, what are acceptable and unacceptable assets as collateral, what currencies are allowed, where it will be held, when it can be released
- Although the reliance on ratings to judge reinsurers appears to be less popular now, many insurers still have rule within their Reinsurance Framework that they will not use reinsurers below a certain credit rating rated, say below S&P AA- (for example). On the other hand, a quantitative analysis might show that there is little impact on their Vectors even for insurers rated A-, in which case they might have shown they have more options than at first appreciated. The points here is to move away from a pure qualitative assessment (like “AA- feels like it should be the minimum”) to quantitative (“This is the impact of dropping a notch, and this is how that compares with our risk appetite”). And while this example is that of a ratings-based framework, an insurer might rather use a solvency ratio, or other, in order to draw a line at “good enough”
- Even if a treaty contains a clause that allows termination if the reinsurer is at risk of defaulting or already has, this can only work to the extent that assets locked up with the reinsurer can be returned during insolvency or under supervisory control. Additionally, if such a pre-emptive cancellation takes place, note that the insurer’s capital requirements will also increase to reflect the risks being returned to its balance sheet (with the other benefits of reinsurance being lost)
- Additional levels of optimisation are possible, for example increasing the number of reinsurers used as a way of diversifying this risk, although this benefit reduces when there is greater correlation assumed between reinsurers’ solvency levels.

Basis Risk

Another example of increasing risk through reinsurance might be in the area of using parametric reinsurance rather than indemnity reinsurance, if not disallowed by regulation. For example, a pandemic bond might pay out according to published country-wide mortality indices rather than looking at the actual increase in claims from that insurer's portfolio.

Reasons for using a parametric cover include convenience, speed of reinsurance recovery, ease of pricing and valuation, and public confirmation of the extent of the claim.

In this case, while the reinsurance still reduces claims risk (there is, after all, still reinsurance in place), there is nevertheless an increase in basis risk. This is the possibility of still losing money on the actual experience even when the reinsurance pay-out might end up being limited by the terms of the contract. To the extent possible, that should be factored into the modelling, as well as the risk targets and tolerances.

As with other parts of this report, there is no intention to generalise about structures or retentions or ratings. Each insurer has unique circumstances that require modelling to determine what is optimal for them.

Arbitrage Risk

It is possible that, because different jurisdictions have different capital requirements, that when risk is transferred, the reduction in *realistic* capital by the insurer is materially higher than the additional *statutory* capital set up by the reinsurer.

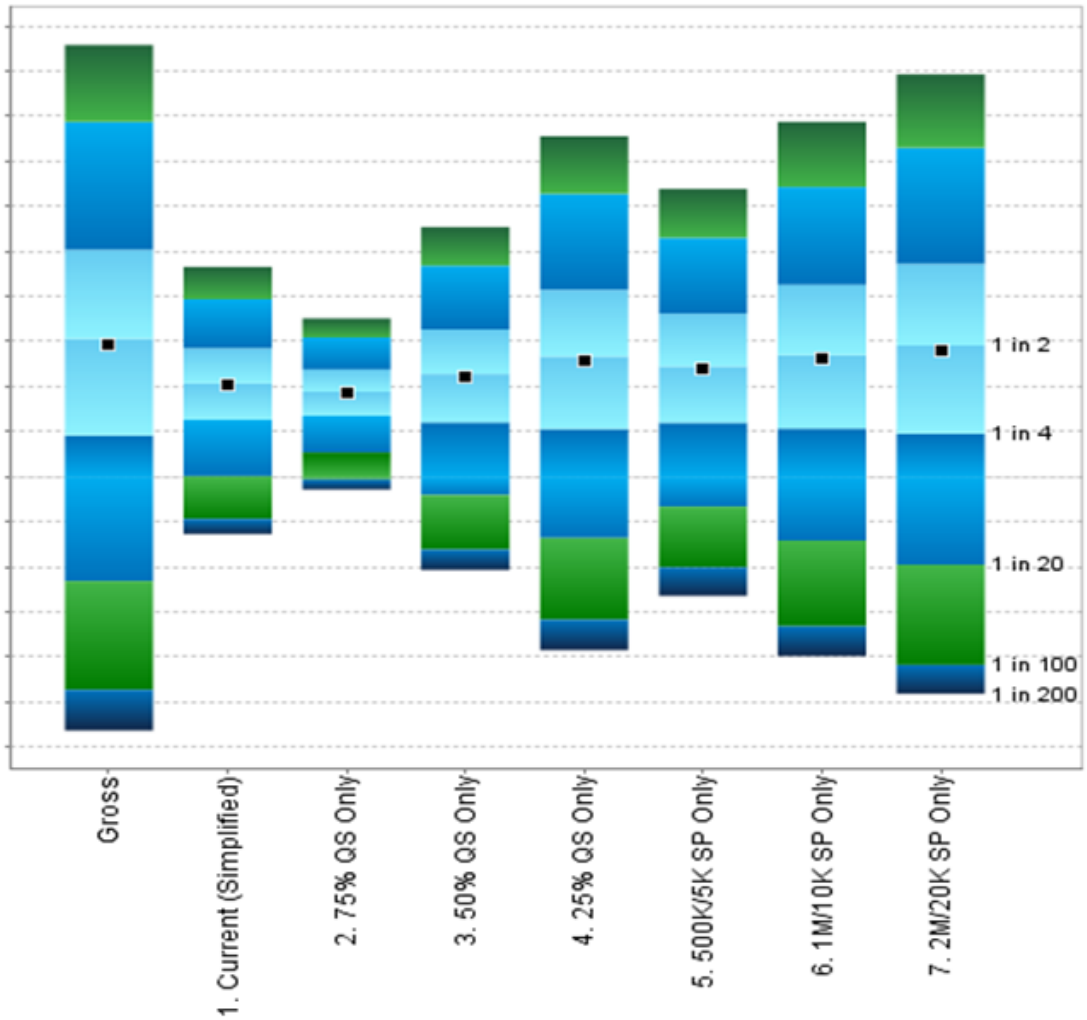
Care is needed in these instances because, if the reinsurer is writing a lot of business which is inadequately capitalised (because of the reinsurer's local capital regulations), this puts the reinsurer – and thus their client – at risk if circumstances shift such that material claims arise for the reinsurer, who turns out to have inadequate capital to meet their own obligations.

Visualising a Vector Analysis

An example of a modelling exercise might be helpful at this stage, to give a sense of what it might look like, although we note that there are many ways of approaching this problem.

An insurer's entire portfolio was modelled, producing 10,000 simulated outcomes of what the dollar-based results might be over the next year. This was done gross of reinsurance, net of the current reinsurance program, and then net of a variety of alternative simplified reinsurance structures. Note that because many different lump-sum products make up this overall portfolio, applying a single reinsurance structure is an over-simplified approach, For example, some products may have been fully retained, but for the sake of this exercise it still provides useful insights.

The output against Sterling-based profits is as follows:



Some observations from the above are as follows:

- The black block (▪) in the diagram represents the average outcome of 10,000, which is our Profit vector. As expected, this result is highest with the gross-of-reinsurance run (axiomatic, unless the reinsurer has mis-priced), and second highest for the reinsurance program that has the highest retention. Since the reinsurer is expected to make money, naturally the dollar profits will be reduced by reinsurance. Note that this says nothing about whether (for example) the RoC increased or decreased as a result of the reinsurance
- Compare the current reinsurance program to a 75% quota share – the expected profit levels are similar, and yet it's more volatile than the pure quota share. Depending on this insurer's targets and tolerances, for a given expected profit, the one option would clearly be better than the other
- Each insurer will have its own version of what volatility means to them – it might be a 1-in-4 scenario (as indicated on the right) to match perhaps their planning period, or even a 1-in-20 scenario might be what they're trying to manage against. Interestingly, it's evident in this graph that most scenarios have very similar 1-in-4 downside results (but with very different Profitability and Solvency levels)

- If this insurer doesn't have a strong solvency ratio, then they might perhaps be advised to avoid running a naked portfolio, and even a 25% quota share or surplus retention with £1m or more might be a too risky for them in the 1-in-100 scenario
- In broad terms, we're seeing that a 25% quota share and a £1m surplus treaty are actually quite similar. This is an unusual result, and appears to be a function of the fact that a single surplus limit is applied to the insurer's entire lump-sum business, including various products with quite different characteristics.

As usual, the results are representative of this (simplified for illustrative purposes) case study, and shouldn't be extrapolated to other products, portfolios, or insurers.

Not just L&H Reinsurance

This quantitative framework wasn't designed specifically for reinsurance. It is built off an insurer's own promises to shareholders and to policyholders or members. Thus, any major decisions an insurer makes should be consistent with this.

Indeed, a review of literature in non-reinsurance contexts shows that this type of approach is common.

When M&A opportunities or corporate restructurings are assessed, these financial dimensions are taken into account in determining the possible impact of the transaction, and thus whether it will be adding or losing "value". The curious reader might consider reading about the transaction announced by Aflac in 2016 (completed a couple of years later), to convert their Japan branch into a Japanese insurance subsidiary. The analysis of the motivations and impact of the transaction gives an interesting parallel in a non-reinsurance context.

Similarly, ALM programs also explicitly take these dimensions into account – they most certainly do not only consider one or two of the vectors before deciding what the program should look like. Indeed, an ALM exercise one of the authors recently reviewed included optimisation against ten different vectors and sub-vectors, including 10 year median returns, 1 year volatility, and the probability that annualised returns in the next 10 years will exceed a specified yield curve plus a margin, and others.

On the non-life side, this type of modelling is quite standard for determining what an optimal reinsurance program should look like, although the complexity of extending this to longer-tail L&H risks can be substantial.

Conclusion

So yes, it's not *just* for L&H reinsurance, but it should *also* be for L&H reinsurance.

A quantitative analysis of determining what an optimal reinsurance program looks like, built around a deliberate construction of explicit targets and tolerances for profitability, volatility, and solvency, should be a fundamental part of any insurer's risk management program.

Exactly how thorough such a modelling exercise should be, depends on the needs and circumstances of each insurer, but certainly the thought process is going to be particularly important the first time it is comprehensively done.

3a. Key Parties: Internal

Introduction

In order to produce or update a Reinsurance Framework, and effect it when buying, managing and terminating reinsurance arrangements, it is likely that many parties will provide input. There are of course external parties who influence the process (such as the regulator, external auditors, and competitors), but in this section we will focus on the internal parties who would typically get involved.

Since many people feed into, and are impacted by, the Reinsurance Framework and its operation, there are potentially going to be a number of conflicting needs and preferences. As a result, it's essential that Reinsurance Governance addresses such situations, to balance these varying requirements, and to ensure consistency with the company's overall governance.

In this chapter, we will explore Reinsurance Governance in terms of the internal parties who are relevant to its implementation and maintenance.

Internal Reinsurance Governance

The governance aspects of reinsurance will deal with how the whole process should be managed, and by whom.

Components of governance

More specifically, Reinsurance Governance should:

- Set out the purpose and scope of governance
- Define a structure for steering reinsurance projects, discussing reinsurance opportunities and disputes, for approving reinsurance proposals and for monitoring reinsurance activities
- List the departments and people to be included, and describe how to ensure key internal stakeholders are consulted and thus able to exert due influence
- Align the differing vested interests of the reinsurance manager, product actuaries, valuation actuaries, internal audit, finance, operations, administration, underwriting and claims and, if relevant, at all of local, regional and group levels
- Position the reinsurance activities at the right level to reflect the financial materiality and relationship impact of any specific case
- Define a method to ensure dynamic governance as the business evolves.

Purpose and scope of the governance

The overarching reinsurance governance should reflect the Reinsurance Framework and company's objectives:

- Provide clarity on roles and responsibilities on reinsurance-related operations, activities, and processes
- Ensure involvement of internal stakeholders on reinsurance-related decisions
- Provide escalation processes to resolve disputes with reinsurers prior to use of independent arbitration or even legal action
- Promote appropriate collaboration with other business units where the insurer is part of a wider group, and consider consistency across the Group on reinsurance-related topics
- Ensure appropriate management of the global relationships with third party reinsurers and consultants
- Ensure identification, monitoring, management, and mitigation of any risks attached to the reinsurance operations
- Include appropriate rules around delegated authority and upward consultation for specific situations.

Setting the governance structure

The optimal reinsurance governance structure depends on the specifics of the insurance company, but should contain a number of essential components, as mentioned above.

As an example, the EU regulation SS20/16 requires Boards to clearly understand the reinsurance operations and risk transfer, and to ensure that the economic impact is reflected in business planning, capital requirements and reserves.

If the Reinsurance Framework is correctly set up, taking both qualitative and quantitative factors into account, and if it is built on a well-defined and comprehensive set of objectives, risk appetite and management principles, then the resulting governance structure should be solid. This means it would avoid common problems such as:

- Buying excessive reinsurance simply because the rates are perceived to be low
- Using a certain reinsurance structure without dynamic review
- Over-reinsuring new products due to non-specific and unquantified risk aversion
- Keeping retention levels fixed over time due to a perception that it is more prudent
- Basing reinsurance decisions excessively on the strength of relationships
- Seeing reinsurance as being primarily about accessing services from reinsurers.

Additionally, the governance structure should reflect both the importance that reinsurance plays within the insurer, and the size of the organisation.

Certainly, the person or committee ultimately responsible for managing reinsurance (both the framework and the work) should have a strong knowledge of the company's objectives and risk framework, should have broad and deep experience of reinsurance, strong relationships with the other vested parties within the company, and good relationships with external parties (such as reinsurers, consultants, reinsurance brokers).

We now move on to consider these various parties specifically.

Internal parties: individuals and groups

There are many people involved with reinsurance, some operating as individuals, some as part of committees. Each company's needs and available skills are different, and this is what will drive the exact set-up.

There is no one definition of the various roles that are relevant in this section, so we have chosen some of the more common terminology.

For example, we have differentiated between a Reinsurance Board that is focused on the Reinsurance Framework, and the Reinsurance Committee which is more focused on doing the work associated with the reinsurance, when in fact both roles could be done by the same group, or indeed by the same person for a smaller company.

Reinsurance Board

Governance structures can be sophisticated, depending on the materiality of the reinsurance operations, the size of the insurer and even its corporate structure.

A Reinsurance Board's responsibilities could include some or all of the following:

- Review past reinsurance strategy and approve changes to the reinsurance objectives, strategy, guidelines, and framework
- Review reinsurance results and key reinsurance-specific risks and shortfalls
- Set clear actions around excess concentration risk or reinsurer downgrades
- Review responsibilities and accountabilities of the teams involved in reinsurance projects and management
- Agree the year's reinsurance objectives, agenda and priorities
- Consider whether any changes should be made to the reinsurance philosophy
- Oversee the local and global relationships with third party reinsurers, reinsurance brokers and consultants
- When there is a reinsurance entity within the wider insurance group, set rules and guidelines on when local offices can, should and must reinsure internally.

A large international insurance group may have its Reinsurance Board at the regional or Group level, which may even ultimately be responsible for both life & health and non-life reinsurance. This is done to ensure a consistent approach to reinsurance, improve buying power, better manage global multi-line relationships, and more. When the Group, and thus the highest Reinsurance Board, is predominantly made up of non-life executives, for example, then the life & health business needs to ensure their own objectives and needs are adequately being addressed.

Reinsurance Committee

Within the Reinsurance Framework, there is often a requirement for a Reinsurance Committee to be more focused on the practical aspects of reinsurance management. In small entities, or those with little need for reinsurance, a Reinsurance Manager could replicate this role, or the responsibility could be part of a wider Committee.

Reinsurance Committee responsibilities would typically be to:

- Ensure that any treaties put in place comply with the Reinsurance Framework
- Provide an overall steer for reinsurance projects
- Measure exposure to reinsurers (monitoring absolute amounts, effectiveness of collateral arrangements, per-reinsurer concentration risk, credit rating, etc.)
- Manage the list (if any) of reinsurers with whom the insurer is allowed to transact
- Make decisions on mitigation tools for managing counterparty credit risk
- Propose and potentially sign-off any new treaties to be entered into, as well as any changes to existing reinsurance programs.

Reinsurance Committee membership would generally be based on roles and expertise, thus would often include some or all of the Chief Actuary, CRO, CFO, COO, and Heads of Pricing & Products, Legal, Underwriting and Claims. For some companies, the Committee might not include the level of CxO staff, but instead include head of valuation (but not Chief Actuary), head of finance (but not CFO), etc.

A well-structured governance process would then include an escalation process (by amount, by nature of risk, etc.) when more senior people should be consulted.

When an insurer operates in multiple countries, it may be that someone from the Regional or Group office is part of the local-level Reinsurance Committee, for example.

Key benefits of having a committee over a single person includes the fact that multiple experts with different skills and experiences are able to opine on the same deal, and it allows any conflicts of opinion to be managed through an open and explicit decision-making process.

Reinsurance Manager

For smaller insurers or where reinsurance activities are limited, Reinsurance Boards and Reinsurance Committees may be deemed to be excessive, but it’s still important to have a single point of responsibility for reinsurance.

It might be, for example, that the Chief Actuary role would include within its responsibilities the Reinsurance Manager function, although when a Reinsurance Manager exists, it’s not uncommon for reinsurance to be that person’s sole area of responsibility. Indeed, for some

companies, the Reinsurance Manager may include responsibility for both life & health and non-life business.

Local vs Regional vs Group

For insurers that operate in multiple countries, there is an additional layer of governance required, with appropriate people allocated to various parts of the process.

For example, the Reinsurance Board might effectively operate at the Group level, a Reinsurance Committee might operate at the Regional level, and then the Reinsurance Committee or Reinsurance Manager would exist in the local office. The local Reinsurance Committee might still include someone from the Regional office.

Different insurance groups manage this in distinct ways, on a scale from significant delegated authority (where the local operations self-determine all but the very largest reinsurance treaties themselves), to tight reinsurance guidelines (where the local reinsurance function is almost administrative only).

Challenges regarding reinsurance roles and governance

Although there is the general comment that reinsurance governance and roles will reflect the specifics of the insurer, there are many matters which feed into this. This could include corporate culture, stand-alone insurer vs insurance group, and overall size (which can vary from a Global Systemically Important Insurer (GSII) to a mono-country mono-line operator).

Documenting reinsurance governance

Typically, the Reinsurance Framework would be written up in detail, covering all the areas discussed in this document. There should be an explicit review process, requiring the content to be reconsidered and signed off on a cycle, perhaps every one to three years. Of course, should there be changes to the company's wider risk appetite, for example, then this should trigger an ad hoc review.

The document should have clear ownership, which also ensures that accountability lines are clear, and that risk of oversight is minimized.

Clarity on accountabilities and responsibilities

Uncertainty of responsibilities for different elements of how reinsurance is designed, managed, and implemented, can result in internal conflicts and contrasting views on reinsurers, structures and treaty performance.

For example, a Chief Actuary may view reinsurance favourably primarily because of the positive capital impact, but the CFO might be seeing reinsurance as a cost since profits are being ceded away.

Underwriting and claims managers may see reinsurance as an opportunity to bring in external expertise and support, but be less focused on whether the rates are competitive.

Having a Reinsurance Framework which is explicit on how to decide which reinsurance is appropriate or not, and then how much, will help deal with this. Additionally, having groups of people responsible for steering and implementing reinsurance will also help balance the varying needs and priorities of the different people.

Managing, not just implementing

Depending on who is appointed to the Reinsurance Committee, there may be a bias towards new business considerations, without due process around the management of already in-force treaties.

Some examples of what might happen in such circumstances include:

- Non-traditional reinsurance opportunities (including capital-motivated deals) may be maintained even though they no longer serve the original purpose. For example, a financing treaty might continue even though there now exists underutilized capital elsewhere in the Group
- Long-standing reinsurance treaties with low retentions may continue to run-off over time, even though more recent treaties have significantly larger retentions. One could this argue that the old treaty is no longer adding value and should be terminated (perhaps requiring agreement from the reinsurer)
- The above will become more common as IFRS17 approaches, because of the effort required to make treaties IFRS17-ready. Indeed, the impact of some treaties might largely be eliminated by the IFRS17 standard. For example, financing treaties which accelerate future surpluses will have their capital benefit neutralised by the operation of the CSM (contractual service margin)
- Other reinsurance arrangements may no longer serve their purpose due to changes in in legal, tax, counterparty concentration, reserving or technical issues. Without a review, both effort and value are being wasted, that could otherwise be avoided.

Conclusion

The focus of this chapter has been on the internal roles and responsibilities of an insurer, ensuring the focus is on efficient implementation of the reinsurance strategy, elimination of conflicts, broadness of approach and having the requisite depth of expertise.

3b. Key Parties: External

Introduction

This chapter deals with the external parties that insurers should consider when developing and implementing their reinsurance programs. Here we consider who they are, and the potential risk of not involving them in reinsurance decisions. While these parties are not signatories to the reinsurance transaction itself, their perspectives (whether binding or not) may impact on the success of the deal.

The various external parties

Regulators

Historically, Regulators have generally applied a light touch to the specifics of any reinsurance deal. While there might be explicit regulations on who qualifies as a reinsurer, what risks need to be transferred (and how much), or the extent of credit taken for reinsurance in reserves and capital, it's certainly uncommon for insurers to have to get approval from the Regulator for every reinsurance treaty.

For capital-motivated transactions, it's more common (although far from usual) for pre-approval of reinsurance structures to be required.

Given the extent to which reinsurance is used, and particularly because it has an impact on an insurer's capital and risk management framework, regulators are becoming increasingly focused on the features of reinsurance which affect its validity, in their perspective.

In the European context, for example, we note Solvency II Directive (2009/138/EC) Article 48(1)(h), Solvency II (SII) Delegated Acts (eg. Article 272 (7)), EIOPA guidelines on the treatment of market and counterparty risk exposures in the standard formula, and EIOPA opinions on supervisory convergence in light of the UK withdrawing from the European Union. In addition, local regulators often publish additional rules or guidance, like the UK's "SS18/16: Solvency II longevity risk transfer", "SS20/16: Solvency II reinsurance counterparty credit risk", "PS33/16: Solvency II consolidation of Directors' letters" by the PRA (2016), and FAS113 in the US for determining significant risk transfer, China's C-ROSS, and Singapore's Reinsurance Adjustment, which mandates, for example, what haircuts are to be applied to reinsurance credit depending on the rating of the reinsurer.

More interesting from the point of view of a Regulator may be a transaction which fundamentally alters the risk profile of a firm. The Regulator may also be interested in the motivation for particular transactions, especially if a transaction has large capital benefits, involves minimal risk transfer, or is in some way unusual. Further to this, some of a firms' regulatory permissions may depend on the risk profile of the firm, and the use of reinsurance may trigger a change to these permissions.

For example, under Solvency II, a firm which reshapes its risk profile through the use of reinsurance may need to update its applications for use of the Solvency II Matching Adjustment or the Transitional Measures on Technical Provisions. Certainly, many Regulators look closely at capital-motivated deals, not just in terms of the structure, but also in terms of how it's used. For example, most Regulators don't want insurers to use reinsurance to boost solvency ratios if it is done simply to be able to justify a larger dividend to the parent company.

Additionally, firms may wish to consult their Regulator where the treatment could be subject to regulatory interpretation or challenge, such as innovative reinsurance structures which are emerging in response to a change in regulation and which rely on an interpretation of the implementation of such regulation. We are aware of cases where a particular reinsurance structure had been used for years in a certain country with no regulatory push-back. However, when there was an evolution of the structure over time which was not addressed with the Regulator, and after the treaty was signed and the Regulator did a review, they actually forced the insurers and reinsurer to retrospectively terminate the treaties ab initio.

The simplest solution for firms would be to engage with their Regulator on an ongoing basis, perhaps annually, to ensure that their use of reinsurance is satisfactory. The extent and timing of engagement may depend on local regulatory culture and history of prior engagement with the firm. For example, a firm looking to enter into an innovative transaction, such as the reinsurance of surrender risk which could offer to replicate the matching adjustment under Solvency II, may prefer to engage with the Regulator before deciding whether to take on this arrangement. This would afford them the opportunity to include any feedback from the Regulator into their decision-making process.

A key area of regulatory interest will be how reinsurance ties in with a firm's existing strategy and governance. Therefore, a firm entering into a new reinsurance contract should be able to demonstrate how the contract fits within their ERM framework, their risk strategy and appetite, and their existing Reinsurance Framework. Depending on their own priorities, the regulators are likely to focus on the impact on policyholder protection and more specifically solvency and liquidity. The Regulator may, for example, look for a demonstration of how any reduction in capital represents a corresponding transfer of risk.

The decision to enter into the reinsurance arrangement is for the Executive and ultimately the Board of the insurer. However, an unexpected contrary regulatory interpretation could still arise, even after signing. This has the potential to affect their capital position, their risk profile, and indeed even their reputation.

The Regulator, where feasible, should therefore ideally be part of the company's processes described within the Reinsurance Framework.

Auditors

Depending on the country, the auditors may or may not be required to sign off on all reinsurance transactions, or capital-motivated reinsurance specifically. For a more complex transaction, the auditors will likely be called upon to sign-off on the presentation of the transaction in the relevant accounts.

If the insurer is ultimately going to have to have particular transactions signed off by their auditors, it is of course recommended to have this discussion in advance of the deal.

Note that many of these discussions are not just around compliance with specific accounting requirements, but they include a fair amount of interpretation too. Sometimes such situations can result in resistance from the auditors, who may initially interpret the deal as a unacceptable, so it's important that both the insurer and reinsurer are aligned and committed to see the transaction through.

Tax Advisors/Authorities

Insurers may confirm the tax treatment of a reinsurance contract with their tax advisors, particularly for material transactions, structures with unusual features, or for intragroup deals requiring confirmation of appropriate arms-length transfer pricing. This all should form part of the decision-making process around whether to enter into the reinsurance arrangement.

Though an insurer may seek advice from their tax advisors, they would be unlikely to consult tax authorities who generally prefer to discuss actual scenarios, not proposed ones.

Note that such discussions with advisors are often not just testing whether a structure is acceptable, but it can be to dig into the details of certain tax rules so that the reinsurance can be structured to specifically achieve a tax benefit (or not to create an adverse tax hit).

Rating Agencies

Since reinsurance has an impact on a company's capital, risk profile, profitability, potential needs for future liquidity, counterparty credit risk, etc., a proper rating agency review of an insurer must take the reinsurance program into account.

Specific points the rating agency may consider include:

- Motivation for reinsuring: the rating agency may assess whether it believes the insurer has entered into a specific contract for the right reasons and whether these reasons align with the insurer's overall strategy
- Ability to manage and administer the deal: an insurer entering into a complex new arrangement may run into operational difficulties if they struggle to administer this new treaty. This could drive additional costs and complexities for the insurer's business, which could impact its ability to generate returns

- Understanding of risks: Where an insurer looks to use reinsurance to enter into a new market, the rating agency may question whether their understanding of the market is sufficient. This is an example of where a reinsurer's market expertise may be of use to the insurer and partnering with a suitably-informed reinsurer may make the rating agency more comfortable
- Market exit: Should an insurer use reinsurance to exit a market, the rating agency may consider whether the structure to do so is appropriate. Here it is likely that the rating agency will wish to be assured that the market has been exited cleanly and that there are few residual risks which may impact the insurer's business in future
- Other contractual considerations: As the rating agency is primarily concerned with the insurer's ability to generate returns, they may wish to consider, for example, whether there are any onerous contractual obligations on the insurer which may have an impact on its profitability in future.

It is possible the rating agency may rate both the insurer and the reinsurer, and thus may be able to see both sides of the contract. This may give the rating agency a sound understanding of the how the contract fits with both businesses' aims and its potential to impact the financials for both parties. As such, the ratings of both firms may be positively impacted by a treaty which the rating agency views as beneficial to both sides.

As above, the most straightforward solution for insurers and reinsurers is to engage regularly with their ratings agencies, but also on an ad hoc basis for material transactions.

For firms where credit rating is a key management metric, it will be important to manage this process carefully to make sure there are no unintended consequences of a deal.

As general themes, discussions with rating agencies could include counterparty risk, effectiveness of mitigations to deal with such risk, downgrade triggers, and likely triggers that could put them on credit watch or even get downgraded.

Analysts and Investors

While investors have limited access to information beyond what is in the public domain, it may be important to manage their perceptions of how a firm uses reinsurance as part of their overall picture of a firm. Investors' perceptions of an insurer and its ability to generate sufficient returns, will be impacted in part by their view on governance.

Reinsurance plays an important role in the profitability, risk profile and solvency position of many insurers, and so should be of interest to investors. As before, the key action for a firm is to clearly articulate its motivations, this time in its public disclosures. Being open about the motivation for the use of reinsurance will enable an insurer to assure investors that its reinsurance program supports the overall business strategy.

Recently in Japan, an insurer did a large reinsurance transaction, the first time they had done one of this nature. During the analysts' meeting when the financial results were being addressed, there was time allocated to addressing this new reinsurance transaction, to ensure that the analysts were clear on the purpose, the mechanism, and the impact. It is likely that if the analysts do understand and appreciate the value of the transaction, this could make it easier for other such deals to be completed successfully. With no adverse reaction to their disclosures, the company put a similar deal in place during the following financial year too.

From another perspective, if an insurer has a choice of raising loan capital or using reinsurance to improve its capital position, and if analysts have previously expressed concern for the insurers' amount of debt outstanding, then using reinsurance as an alternative might be better received by the analysts and the investor community.

Communication with analysts and shareholders is very different to dealing with parties like regulators and auditors on a private basis.

Legal experts

For traditional reinsurance, an in-house contract specialist might be the ideal party for creating, negotiating, and changing treaties. For more specialised forms of reinsurance, companies might want to use a more senior lawyer, or indeed external counsel.

Beyond the treaty wording itself, a legal review of certain structures might be required, or at least recommended. For example, insolvency law or the use of trusts are very specialised areas, and whereas the actuary might feel that the structure should work as intended, an external specialist might have insights that have a material impact on the actual outcomes.

Reinsurance Brokers and Consultants

The nature of the various external parties we've discussed above is such that they may impose specific requirements on, or have expectations for, reinsurance (either its form or its result).

It's important to discuss Reinsurance Brokers and Consultants in this section on external parties.

Although they don't make obligatory demands on the reinsurance program – like a regulator might – they are nevertheless actively involved in doing analysis and making recommendations in relation to various aspects of the Reinsurance Framework.

Indeed, depending on the company and the transaction, the Brokers or Consultants might be extremely influential regarding the ultimate program.

Both could play a role in helping to clarify what a company's objectives are, what reinsurance is optimal, and indeed who might be the ideal parties are to approach.

Additional work could include negotiating the reinsurance, modelling, counterparty credit risk monitoring and benchmarking.

Whereas both Brokers and Consultants can be involved in the technical work described above, a key difference is that in many countries, only a reinsurance broker is licenced to negotiate terms with reinsurers, on behalf of the insurer.

Conclusion

Even when an insurer is not required to discuss reinsurance transactions with external parties, there are many reasons why it might still be advisable.

A proper process for doing this – both regularly as well as one-off – should be part of the Reinsurance Framework. And the process should take into account what might be sensible, rather than only what is confirmed and previously locked in.

3c. Key Parties: Various Reinsurers

Introduction

Having discussed the various internal and external influencers and decision-makers in the reinsurance process, we now consider the role played by the reinsurers. In particular, this section is about the need to approach the "right" reinsurers and consider all relevant alternatives, particularly for financially motivated transactions.

Potential improvements

It is possible for improvements to be made in the way reinsurance is implemented, especially when there are either misconceptions or limitations in how the Reinsurance Framework has been set up.

Our focus here is on the choice of reinsurers who are engaged as part of a reinsurance program. We discuss both common shortfalls as well as potential solutions.

Non-traditional reinsurers are an option

Although we've been talking about reinsurers as if they are a single well-defined group of companies, it's important to note that non-traditional companies should also be considered as part of the market.

- Many investment banks have an entity with a reinsurance licence within the Group, which can be used for certain transactions, usually capital-motivated reinsurance, or for treaties which primarily transfer asset risk
- While ILS funds (Insurance Linked Securities), through the establishment of captive or special purpose reinsurance vehicles, have played a much bigger role in the non-life space, there is increasing use being made of ILS funds for risk transfer in the life & health space
- There are also sovereign wealth funds, alternative asset managers, private equity companies and hedge funds, all with specialist insurance units, that may provide solutions that would otherwise be done through traditional reinsurers (even if reinsurance is not the mechanism ultimately used).

Such players may well offer structures, prices, or transfer of certain risks, but they are not always brought to the table for several reasons:

- The insurer's Reinsurance Function may not know that these companies offer relevant solutions, or might not have the right contacts at those companies even if they did
- The Reinsurance Framework may not be sufficiently flexible to allow transactions with such parties, for example due to concerns about counterparty credit risk (whether justified or not)

- The company's quantitative framework may not be sufficiently well developed to be able to capture the value added by some of the less common methods of risk transfer offered by these alternative players
- There may be different silos within an insurance company so that the people making the reinsurance decisions, and those who know the wider market, are disconnected.

The way to ensure that these alternative players are appropriately engaged involves reversing the above sticking points. This includes:

- Ensuring the Reinsurance Framework is sufficiently broad and sophisticated that makes transacting with such companies possible
- The Reinsurance Function should either know some of these companies, or engage with reinsurance intermediaries who do
- Improving the Reinsurance Framework so that if an alternative capacity provider does indeed offer better terms, a well-structured framework would be able to demonstrate that.

It may not be enough to limit your options to a few big reinsurers

Two fairly common misconceptions in this regard are:

- Reinsurers are broadly similar in terms of pricing, product offering, risk appetite, structural preferences, and more
- A bigger reinsurer is always better than a smaller reinsurer.

These lead to the erroneous belief that talking to a few of the big reinsurers always suffices for a representative picture of the complete market, thus allowing the insurer to conveniently optimise its reinsurance structuring and purchasing.

Large reinsurers do have the advantage of scale, global diversification, pools of experience data, and service infrastructure. However, they may also have greater overheads, a more conservative attitude to risk, a vested interest in preserving the status quo, and a concern about cannibalising their existing portfolio. Smaller reinsurers, on the other hand, may have a particular strength with certain lines of business and thus may be very competitive with those lines, or offer preferable structures or added-value services. Some reinsurers may also be more open to non-proportional and other less common structures while the larger reinsurers might prefer the commonly adopted structures.

Further, a larger reinsurer isn't automatically "more solvent", and a less solvent reinsurer isn't automatically "not solvent enough".

Similarly, while there might be certain benefits from working with a single reinsurer over many years, unless the market prices, structures, and services are regularly tested for competitiveness, there may well be drift to a non-optimal reinsurance program. As we've discussed in this paper, this may not be ideal either to shareholders or to policyholders.

Optimisation of reinsurance purchasing is about working with whichever parties will provide the optimal combination of cover, structure, price and service. That might be with a large reinsurer, but that might also be with one of the smaller or lesser-known companies, or even with a combination of companies. For this reason, it's valuable to widen the range of reinsurers that are considered as potential partners.

The simple solution is to approach the reinsurance and associated risk transfer market more widely.

This is often advantageous as the marginal cost for broadening the tenders can be low (for instance, by prior engagement with, and then sending the same initial high-level RFP pack to, all potential counterparties, before narrowing down the field based on their responses). Not doing so could mean missing out on the possibility to get "better" reinsurance (for example, P&L cost savings, enhanced risk and capital management, product innovation).

Such a wide approach to the market should cover reinsurers in different jurisdictions and regulatory regimes where appropriate, as different capital regimes or risk diversification could enhance the competitiveness of a reinsurance proposition.

To the extent that reinsurers are being engaged with lower ratings than previously used, this can be managed through better counterparty management, such as the use of collateralisation. We are aware of insurers who don't use reinsurers below AA-grade simply because their current risk management framework doesn't allow for that, even though they have had to decline better terms than were offered by their current partners. An upward challenge to the wider risk management function could be worth it in those cases.

In practice, some insurers may not be able to identify the full scope of the reinsurance market or may perceive this as a labour-intensive exercise with insufficient or uncertain benefits. In this case, an effective way to develop a broader market view and wider access to providers would be to engage reinsurance intermediaries (brokers, consultants, or bankers).

Risk appetite and capabilities of reinsurers change over time

There is often not enough appreciation among practitioners that the appetite and capabilities of reinsurers can and do change substantially over time.

An often-heard misconception is that there is no need to approach a particular reinsurer or risk-taker because the appetite or pricing of that party was unattractive a couple of years ago. The perception exists that reinsurers are slow to evolve their risk appetite and business offering and, consequently, insurers thus miss opportunities to enhance their existing reinsurance program.

The solution is to remain in contact with reinsurers, even if they're now less competitive.

This should not be particularly time-consuming, and would allow an insurer to understand what to expect from any reinsurer in terms of new product offerings, risk appetite, underwriting capacity, and other developments that could potentially influence pricing.

In practice this dialogue can work both ways. Not only will an insurer understand at all times where a reinsurer is placed, but it also has the ability to clarify its reinsurance needs, which can change as a result of regulatory developments, strategy shifts and business needs.

Importantly, through regular dialogue, an insurer can to some extent influence the development of the reinsurer's capabilities and offerings. Hence, the role of an insurer's reinsurance function clearly encompasses relationship management.

Intragroup reinsurance may be an option

Even when internal reinsurance entities exist (or insurance entities that can take incoming reinsurance business), insurers may still ignore the potential role for intragroup options.

This may be done as part of the traditional reinsurance program, either by including them as part of the tender process, or even making it compulsory for a share of certain business to be reinsured internally.

An insurer should have specific objectives in establishing or using such a "mixer", which has business from various countries being reinsured into this single Group-owned vehicle.

Benefits brought about by such vehicles can include P&L savings (of reinsurance profits otherwise lost externally) and optimisation of Group capital management (by making their own use of risk diversification). Regarding the latter, intragroup reinsurance can effectively help to monetise group diversification and lead to a reduction of the total risk capital required to support the different entities' activities. Also, on a more strategic level, transferring a share of the risk to a central entity, in conjunction with external reinsurance, can help an external reinsurer to get comfortable with a risk exposure, since it ensures the alignment of interest when the insurance group retains a vested interest in the outcome.

Ignoring intragroup reinsurance can potentially lead to purchasing "too much" reinsurance externally with associated P&L impact and suboptimal Group capital management.

Of course, internal and external reinsurance are not like-for-like, and important differences exist. Although internal reinsurance can reduce risk at the local business unit level, from a group risk perspective, intragroup reinsurance clearly does not reduce overall risk exposure. Correspondingly, internal risk transfer arrangements and associated capital requirements usually consolidate out at the group level. Therefore, the Group risk appetite should be included in the assessment of whether an intragroup risk transfer arrangement could meet the objectives of the different stakeholders, namely the ceding entity, the intragroup reinsurer and the wider Group.

As outlined above, the key advantage of intragroup reinsurance is the ability to pool risks centrally, allowing for the monetisation of diversification benefits at an entity level. Although reinsuring internally or externally is not a binary choice, it is recommended that, at an early stage in the tender process, the potential value and feasibility of internal reinsurance is evaluated, considering the objectives of all stakeholders involved.

It's worth taking a moment to differentiate between diversifiable and systemic risk.

- Insurers of the same group, but in different countries, can reinsure large individual cases intragroup, which manages volatility at the local level. But the low correlation of lives across countries means that the receiving entity will benefit from a greater level of diversification. This reduces the overall amount of risk that needs to be ceded externally.
- Asset risk, on the other hand, is systemic and thus not diversifiable to the same extent. For example, an insurance group that writes VA business, and then reinsures the GMxB risk (various guaranteed minimum benefits) up to the parent, will find that when the markets crash globally, there is no effective diversification and thus no protective value from the intragroup reinsurance of those risks.

When a strong quantitative framework exists, the value of bespoke reinsurance solutions becomes more obvious

A common approach towards reinsurance is to have a pre-determined view of what a reinsurer or alternative solution provider can and cannot do, and an unchanging view of what the insurer wants a treaty to look like. "Market standard" reinsurance remains the default, even when other options would give better results.

Since these traditional arrangements are often off-the-shelf, they are quick and easy to communicate and implement. Contract wording may already exist. However, these do not necessarily represent the best possible solution for the business in scope. Given the growth of risk-based supervision globally and the emergence of proprietary risk capital modelling, optimising reinsurance may require insurers to forego established practices and traditional reinsurance structures, and instead explore the benefits of tailor-made solutions. However, an insurer's ability to work with a reinsurer to develop innovative and bespoke solutions from scratch is sometimes not tested enough.

A clear trend over the last decade in the risk transfer market is the growth of customised and structured offerings. Therefore, rather than approaching risk takers (reinsurers, banks, ILS funds) with a market-standard solution in mind, it can be more effective to approach these parties with the business problem, and then assess their appetite to collaborate and develop something optimal for the insurer. This approach typically benefits from approaching the market widely, as the flexibility and creativity needed to develop bespoke solutions can vary substantially between risk-takers.

As an example of bespoke solutions, it might be attractive to explore a carve-out of specific individual risks, rather than reinsuring all risks within an entire portfolio. Such a carve-out may require more analysis than standard proportional reinsurance, but could be a closer fit with the insurer's risk and capital management objectives. For example, reinsurers might be more aggressive with their rates for older lives, or larger policies may have a greater net impact on capital.

Insufficient focus on counterparty credit risk

There may be inadequate consideration of counterparty risk, either when setting up the Reinsurance Framework, or at the implementation stage.

There are a number of different problems that this can give rise to:

- If counterparty credit risk isn't being adequately measured, then a company may not realise the extent to which they are overexposed to a single entity
- The value of diversification across reinsurers might not be recognised by the existing risk analysis
- An insurer may have a simple framework that prevents them dealing with reinsurers below a certain rating, even when a proper analysis may show there is still "value" enhancement using other reinsurers, in spite a greater cost from haircuts, credit mitigation tools, or having to hold capital against the residual risk
- The insurer's Reinsurance Framework may not give adequate credit to mitigation tools, so that alternative capacity providers or lower-rated reinsurers are judged less attractively than the true risk they pose to the company.

Whilst it is not recommended to base reinsurance decisions on counterparty exposures and creditworthiness of reinsurers in isolation, a proactive approach is recommended.

The solution is therefore to ensure that counterparty credit risk is correctly measured, monitored, managed, and mitigated.

The Cost of Services

In our discussion around the qualitative and quantitative reasons for buying reinsurance, we identified that while access to services provided by reinsurers is a key driver for many reinsurance decisions, the financials around profitability, volatility and solvency should not be ignored.

If services are an essential part of the arrangement, and reinsurance could be available cheaper elsewhere without the services (or simply less reinsurance would otherwise be used), then the insurer should at least quantify what the cost of those services are, relative to the risk-only alternative. This helps to identify if other solutions are possible, perhaps where services are bought elsewhere more cost-effectively.

A situation where a gap is often observed, is where an insurer sets up a so-called “preferred reinsurer panel”. This is where a few reinsurers are chosen, and for the next few years, all reinsurance will be shared amongst this group only.

While the concept is interesting and there are benefits to such an approach, the implementation can be flawed and thus negatively impact the ultimate reinsurance implementation.

For example, in order to get to the second round of a reinsurance tender, applicants may have to show that they are able to provide a full range of services, including an underwriting manual, training for underwriters and claims assessors, access to experience data in many markets, and more.

This full-service requirement would automatically disqualify some of the smaller reinsurers, which might actually be the companies with the most flexibility in structuring, or the best pricing. In this case, filling the preferred reinsurer panel only with full-service reinsurers with their greater overheads, may not achieve the best pricing for a deal.

This is not to say preferred reinsurer panels don’t work, or that the full-service reinsurers are always expensive and inflexible. But rather we want to emphasise that these points should be taken into account when setting up the tender requirements and the panel design, so that “optimal” (however it is defined for that insurer) is indeed possible.

Again, there is no one-size-fits-all solution here. A company should develop its needs and objectives into a framework which would show what is optimal in their particular case. And the framework should not inadvertently exclude potential value-adding partners through poorly defined criteria.

Conclusion

The purpose of this chapter is to highlight areas where insurers may, even inadvertently, be preventing a truly optimal reinsurance program from being put in place.

An insurance company can enhance their use of reinsurance by engaging with a larger number of players in the market, including non-traditional providers, and focussing on building a robust reinsurance evaluation framework that is capable of quantifying appropriately the true value-add of the less common solutions and partners.

4. Optimising the Structure & Terms

Introduction

As we've discussed, there are both qualitative and quantitative factors to be taken into account when producing an optimal reinsurance program.

In this chapter we build on the broad frameworks we've developed so far, and focus on a number of reinsurance-specific areas.

As has been highlighted before, there are no statements claiming that one option is always better than the alternatives. In each case, the specifics of what an insurer is looking to achieve, as well as its targets and tolerances, will determine what is best for them.

Reinsurance considerations

We highlight below several considerations to be taken into account when producing guidelines within a Reinsurance Framework or implementing a specific treaty.

Cost *vs* Benefit

Reinsurance affects Profitability, Volatility and Solvency, and it can therefore no more be called a pure expense than can the underlying insurance business to policyholders. The amount and structure of reinsurance needs to be measured relative to each of these vectors to determine what is best in each case.

'Cost' might be a reduction in profits, or a reduced RoC, for example. 'Benefit' could be improved volatility, enhanced solvency, or even increased liquidity.

Clarity on this is of course the essential starting point before trying to optimise structure or features of the reinsurance.

Proportional *vs* Non-proportional

Historically, decisions on this have often been qualitative in nature, whereas a proper quantitative framework would have allowed the impact of the different structures to be evidenced by the output of a model.

Proportional treaties may be believed to be good because there is both "more risk transfer" and access to services in parallel. Or they may by rule-of-thumb be deemed to be bad because the effectively "give away too much profit". On the other hand, non-proportional treaties may be deemed good because they reinsure "just the right amount", or they may be deemed bad because capital requirements (and thus cost of capital) would be proportionally much higher than for proportional covers.

There may be some truth in these various ideas, but it's not difficult to test the right answer for a company. For example, even a simple stochastic model could show that a proportional model might reduce volatility more for relatively normal years, but the non-proportional solution might offer greater volatility protection as the experience becomes more extreme.

As to which is appropriate for any insurer depends on the metrics, targets and tolerances, and prioritisation of vectors.

Use of increasingly structured or bespoke solutions

Though established structures often suit routine new business needs, this does not always hold true as companies and conditions evolve. Client-centric reinsurers who are looking to improve their offering will ensure that even their traditional solutions evolve, and recent moves to 100% reinsurance of term assurance business by some of the leading UK writers is evidence of this.

There is a wide space between standard traditional reinsurance and bespoke capital-motivated deals. The more an insurer understands (and can explain) what their financial objectives are and what they're trying to achieve through reinsurance, the greater the possibility that treaty variations can be put in place which achieve exactly that.

The characteristics of the portfolio are key

It is easy to focus on the short-term issues when looking to manage risk, but this can often have negative long-term consequences. There could also be a tendency to focus on the issues which are topical, when in fact they may not be the major risks that a portfolio faces. Either of these issues could lead to less-than-optimal reinsurance solutions by, for instance, reinsuring the wrong risks in the portfolio when aiming to bring down the overall volatility of the book.

An example of this is that an insurer might see higher claims at the older ages, so they focus their reinsurance there. But a higher number of claims may come with greater certainty, so that the lower volatility means there could be less of a need for reinsurance at those older ages. The real volatility is perhaps at the younger ages where deviations relative to expected could be substantially higher.

For cancer or critical illness business, sometimes the reinsurance treaty is focused on protecting against claims fluctuations from year to year, when in fact the bigger risk is that there will be an adverse trend over many years. Without an understanding of what can go wrong (including an understanding of medical technology, for example) the annual reinsurance program will have limited value.

Disability income business may not be fully understood, in that there are four fundamental risks: too many claims, larger claims, claims remain in-force for too long, and interest rate movements. Reinsurance cover needs to consider all of these if it is to be effective in

reducing volatility overall. And then the cost of that risk protection needs to feed into the vectors to ensure the program is optimal.

An analysis of the portfolio (by nature and by experience, including stress tests or stochastic analysis) should be a core part of the starting point of reinsurance discussions, in order to get the right cover.

Counterparty risk mitigation tools

When a company has a proper risk framework, they are better able to discern what their perception of risk should be.

For example, consider a company with material counterparty credit exposure to a reinsurance company. There are several ways they might think about this:

- They haven't thought about counterparty risk for a new deal, or they have but are using the wrong measure for the exposure and the risk, and therefore they can't begin working out what should be done next, or
- Although the risk is correctly determined as being material, it's deemed neither too likely nor too large, and so can be ignored, or
- The risk exists, but they're happy to absorb it, so will simply hold capital against something going wrong, or …
- This is a risk they would rather not keep on their balance sheet, so will use a mitigation tool to protect them if things go wrong, or
- They've considered mitigation tools, but the cost negates the benefit they're getting from the deal, so won't proceed.

The first thing that insurers can get wrong is they aren't clear on the points above, and therefore end up keeping a risk which should be taken off their balance sheet. Alternatively, they end up paying to get rid of the risk, when it would have been acceptable to keep it (albeit with capital being held against something going wrong).

The second thing that insurers may get wrong is that, when they send the risk off balance sheet, they either use the wrong mitigation tool, or the wrong form of the right tool.

Examples of structuring problems with mitigation tools include:

- Using a tool not recognised by the Regulator, accounting rules or capital regulations
- Assuming that because it's not a capital-motivated treaty, there probably isn't any counterparty exposure risk
- Not implementing basic tools first, like set-off mechanisms (where possible)
- Using clever treaty wording to reduce exposure, without appreciating that it invalidates the treaty under local regulations, or that it is unenforceable in a situation of insolvency
- Buying too much protection, and thus unnecessarily losing value

- Making the credit risk protection contingent, not realising that the time when the reinsurer would have to set up the collateral is exactly the time that they're under stress and thus may be unable to set up the collateral
- Having the wrong assets as collateral, which themselves would have fallen in value at the time you would want to use them
- Insisting that collateral is held in trust, which prevents the reinsurer from using the assets during the term, thus potentially destroying the value of the deal to them.

The Reinsurance Framework should address the above points with actionable guidelines so that this can be efficiently dealt with each time a new treaty is put in place.

Capital and Cost of Capital need to be correctly determined

This is an extension of the discussion we had in the chapter about quantitative frameworks, but there are some additional points that need to be made here.

If you use the wrong measure of capital, then your recommended reinsurance structure could actually be totally wrong. Some examples are:

- Companies forget that capital can be measured on a Regulatory basis, Risk basis, or Ratings basis – and they are not always clear about what should be used in driving the cost of capital when pricing traditional products, or when comparing different capital-motivated solutions.
- Some companies don't buy cat covers because their local regulatory framework doesn't require capital to be held against catastrophic events, and therefore the reinsurance doesn't appear to impact their balance sheet. We should not confuse the existence of risk with the requirement to hold capital.

If your cost of capital is wrong, you could similarly get your reinsurance wrong:

- There is a difference between senior debt and sub-debt, and when comparing reinsurance financing to debt to determine competitiveness, the correct comparison should be made
- The EV discount rate is not automatically the right cost of capital, nor is risk-free a meaningful default number
- There is a difference between RARoC (risk-adjusted return on capital), RoRAC (return on risk-adjusted capital), and RARoRAC (risk-adjusted return on risk-adjusted capital), and the correct one that an insurer uses overall should be the one that feeds into the reinsurance quantification framework.

Ultimately, the cost of capital should be the result of a frequent and detailed analysis into an insurer's financing options and corresponding costs. This should, for instance, take into account an insurer's Cost of Equity and Cost of Debt and could be represented by a

Weighted Average Cost of Capital (WACC). This number should feed into the reinsurance decision-making process.

Naturally we also need to consider the need for additional capital given the current solvency ratio of the insurer, dividend strategy and growth strategy, and their impact on projected solvency. These factors will determine the required capital in the medium-term, which should then be sourced in the most appropriate way.

Clarity on local regulations

Each jurisdiction has its own limits and rules around the extent to which reinsurance transactions can be taken credit for, both in terms of accounting and regulatory statements.

As a specific example of what this might imply, different frameworks may have different risk transfer rules, and an insurer might be able to take credit for a certain deal under IFRS17 while not being able to take credit for that deal under local solvency regulations.

Another example involves the consolidation of accounts, where a deal might be contributing capital at the local level but might not be admissible at the holding company level which operates in a different jurisdiction.

The outcome could be significant (like a hole in the balance sheet), or less material (like paying for a benefit you can't take credit for).

Also, some regulators may require features such as cash transfers, collateral, or the elimination of basis risk to be able to fully recognise a transaction. Recently, there was a case of an insurer claiming relief under Solvency II for a stop-loss treaty from a well-capitalised guarantor. However, as they were using the Standard Formula model where such protection is not considered admissible, they ended up having to pay a fine for under-representing their required capital. The relief was entirely rational given the substantial protection provided by the guarantor, but unfortunately the standard model made no provision for such a cover.

Profit Sharing is only valuable to the extent it actually adds value

A profit-sharing (or experience refund) arrangement in reinsurance is where the insurer gets a share of the reinsurance profits ("profit commission") paid back to them. The assumption of many insurers is that such a feature is automatically a good idea, without having done a proper quantification of its effective cost and thus whether it's objectively valuable.

Such insurers qualitatively believe that the net cost of the reinsurance will be minimised since they're getting some of the profits back, but a proper analysis shows this is not necessarily true.

The first point to note is that reinsurance profit sharing is not free. Reinsurers start off calculating the risk premium without profit sharing, which includes best estimate claims,

expense loadings, and a cost of capital factor. They then load those rates for the expected profit refunds plus the additional cost (if any) of capital held against adverse outcomes. This ensures the reinsurer still meets its hurdle returns, even after agreeing to refund some of their profits in the good years, while taking the full losses in the bad years.

The second point to note is that vectors will be core to determining whether profit sharing makes sense in a specific case. We present a simple example to make this clear:

- On an *expected basis*, the insurer and reinsurer should perhaps be indifferent to the existence of profit sharing. In other words, the cashflow between the two parties, in an average year, should net off to the same amount
- In a *good year* where claims are less than expected, the insurer is better off with a profit-sharing arrangement, because the profits that result from low claims (plus some of the loading for the profit share) are partly being paid back
- In a *bad year* where claims are worse than expected, the insurer is worse off with the profit-sharing arrangement, because the reinsurer is still paying the same amount of claims (regardless of whether there was profit sharing or not), but they are also getting (and keeping) the higher loaded premium.

Therefore, if the company is focused on supporting their Profitability vector, then profit sharing might be preferable, even if the mechanism leaves them worse-off in a bad year. But for a company looking to protect their downside (which may be why they are reinsuring in the first place) a profit-sharing arrangement is perhaps making things worse.

Additional features within the profit-sharing arrangement, like losses carried forward and build-up of contingency reserves, may serve to swing the profit sharing further to the reinsurer's benefit (depending on the specific design on these features).

Again, there is no rule-of-thumb as to whether an insurer should prefer a profit sharing or not, but rather they should determine this from a proper vector exercise.

Additionally, because profit sharing can materially change the extent of risk transfer in a treaty, this may then impact on the insurer's ability to take credit for the reinsurance under certain frameworks.

From the reinsurer's perspective, they should be careful in agreeing to profit sharing where there is a possible negative future trend – beyond that built into the rates to be used in future – as they may need to ensure they retain profits in the early years of the transaction to build up reserves for these future potential losses.

Changes in the environment or in experience

Companies often ignore the fact that the economic and regulatory environment may fundamentally change over the lifetime of a treaty, and thus there should be consideration given to having intelligent termination conditions or reviewability of terms.

Examples of this might include:

- If certain regulatory changes take place (for example, the insurer can no longer take credit for the treaty) then the insurer can terminate without penalty
- The insurer has the option to terminate without penalty after, say, 10 or 20 years
- The reinsurer can terminate on a pre-agreed basis if the in-force falls below a stated volume
- Rates can be reviewed if experience deviates materially from expected, in either direction.

There are some additional comments that need to be made in this context:

- If there is a mechanism to increase rates when experience deteriorates, then in a neutral structure there should be a mechanism to decrease rates when experience is good. Without this two-sided perspective, the one party effectively has a valuable option, which should be used to improve the pricing for the other party
- Again, this is not to say that a one-sided review is inappropriate, but rather if it's one-sided then this valuable feature should carry a cost in the treaty pricing
- Having a treaty says that says "We agree to discuss acceptable terms for termination" serves no value at all, because there is nothing binding or even directional in such wording. Even without such a clause, the parties always have the option of discussing acceptable terms for making changes. If there is to be a paid option for future termination, then wording is only useful if it is explicit about exactly how the termination will take place. For example, "The termination penalty is to be the present value of profits foregone by the reinsurer under [*reasonable*] best-estimate assumptions, at a [*basis*] discount rate."
- A treaty which allows the one party to increase or decrease rates according to their own determination is neither fair nor even directional as to what might happen. A more useful mechanism is to include a statement that says that rate changes should reflect observed changes in experience of the underlying portfolio on an agreed method for analysis.

Without the ability to change or terminate the treaty according to clear principles which are stated up-front in the wording, the parties are at risk of being stuck in a contract which no longer adds value, or indeed which is negative value.

Right now, for example, many insurers are looking to terminate their small and old treaties, to avoid the transfer of all of them into the IFRS17 framework. What should be a quick and simple exercise is proving to be time-consuming and resource-intensive, because the parties never anticipated things might evolve as they have.

Note also that we are not saying that if an insurer is losing money paying for reinsurance on a portfolio where experience is much better than expected, or where the reinsurer is losing money on a portfolio whose experience is bad, that they should be able to just walk away.

We are however saying that changes should be anticipated and allowed for, and that the right to change in one direction should be matched by a right for the other party to make changes in the other direction (unless the one-sided option is incorporated into the costing). Again, this includes both specified changes (like regulatory updates) and unspecified changes.

Looking specifically at capital-motivated deals:

- Any form of structured solution needs to have some flexibility as the environmental changes may make the structure irrelevant or inefficient. Regulators may make certain covers no longer capital efficient, or very costly to the reinsurer (hence having pricing implications).
- For example, over ten years ago, the CIRC (the then-insurance regulator in China) changed the rule for reinsurers such that the reinsurer needed to mirror the insurer's capital release with a capital increase. Previously, reinsurers were able to hold almost no capital for remote risk financing treaties and were thus providing this cover at a very low cost to their clients. This change in rules made these sorts of transactions exceptionally costly for the reinsurer, and any of them that had bound themselves into such a transaction for a long duration might have created a significant capital strain for themselves.
- A downgrade clause is another condition that needs to be considered carefully. Without it, an insurer may end up with a close-to-worthless cover, as its counterparty might be at risk of insolvency, but with such clauses automatically allowing re-capture, a reinsurer with financial issues may accelerate its own adverse solvency deterioration.

Asset-related rate guarantees

We have witnessed many times over the years, the misconception that certain elements in the environment would not change and therefore that guarantees (both implicit and explicit) could be ignored. This issue may sometimes even have second-level implications.

Indeed, offering any sort of medium- or long-term rate guarantee needs to be very carefully considered, and always charged for.

- Obvious mistakes were made in the 1980s with investment guarantees, where high inflation meant interest rates were expected to remain high. As interest rates fell, this cost insurers and reinsurers a lot of money, both in terms of actual excess payments going through the P&L over time, as well as in terms of the up-front reserving strain resulting from falling rates
- Reinsurers, through their treaty wordings, may base certain terms on expectations of a long-term low inflation environment, but may incur losses in the future if the environment turns

- Many treaties, both traditional and non-traditional, include a specific reference to interest rates in the wording. This might be for unwinding reserves, building up a recovery account balance, or within a profit-sharing formula. The way this is applied might imply a minimum guaranteed return on the underlying reserves, for example, which should be cautioned against
- In health business, changes in disease incidence, diagnosis, treatment methodology, or as simple a change as the supply of hospital beds, can have a significant impact on claims. Cancer is an example where companies generally accept there is an increasing trend in incidence. However, if this deteriorates faster than expected, it could cost a lot of money in the long-run, even decades into the future
- Disability incidence and recovery rates fluctuate with the economic environment, but sometimes with much more of a lag than one might anticipate
- In Israel there are requirements to hold reserves onshore, and as a result some insurers have provided a guaranteed interest rate to their reinsurers on these withheld reserves. Additionally, Israel has a history of providing real returns to both policyholders and reinsurers, so in effect they are guaranteeing an interest rate plus CPI inflation on the reinsurers' reserves deposited with them.

While a long-term guarantee may be perceived at inception as having a low cost, it can end up costing a large amount. Parties should therefore be aware of the possible capital and cost implications, and aim to avoid them where possible. To meaningfully assess the implications of guarantees, a stochastic model should be used.

Interest rates, used administratively

In addition to interest rate guarantees being offered to policyholders or insurers, we note that interest rates are also found in various other places in the treaty.

At the time of writing this paper, some countries are experiencing negative interest rates, which can have unexpected results within a treaty.

- As a penalty for late payments, interest rates might be applied to outstanding balances. But if the nominated bank interest rate is negative, this could actually reduce the amount due by the defaulting party over time
- Similarly, if a balance accrues, or reserves are unwound, at a specified rate (like 3-month USD Libor, for example) then a negative rate will serve to work in the opposite direction to what was intended.

Some treaties apply a 0% floor to referenced rates, whereas others work best by allowing rates to be negative. Either way, this should be a deliberate decision, especially since negative rates are not just a one-off aberration from the past.

Reinsurance premium rate guarantees

For mortality risk, it's common for reinsurance rates to be lifetime guaranteed. Although this could end up being a significant problem under certain circumstances, the fact that mortality trends are relatively stable, and that the state of being "dead" (as opposed to being "sick") is well-defined, this is generally deemed to be an acceptable risk.

That said, a pandemic could potentially cause losses that would never be recovered. And in some markets where Terminal Illness benefits are common, a fair amount of subjectivity can creep in, thus threatening the long-term profitability of a mortality portfolio.

However, for morbidity business, particularly cancer (and critical illness more generally) this is proving problematic.

Some buyers of reinsurance in many markets often insist that pricing terms are guaranteed for the term of the underlying contracts. There are different reasons for why that might be the case, both qualitative and quantitative:

- The guarantee gives the insurer comfort that they are fully protected over the term of the reinsured portfolio (note that while this might be true, a proper vector-style analysis should be done to show what the implications of this guarantee are)
- If they guarantee the rates to their policyholders, they might want a matching guarantee from their reinsurer
- Under certain frameworks, like Solvency II, if an insurer guarantees rates to the policyholders but does not have equivalent guaranteed rates from the reinsurer, then the extent to which they take credit for reinsurance in reducing their capital will be limited
- In capital or accounting frameworks where the concept of a "contract boundary" (including Solvency II and IFRS17) exists, then the lack of a guarantee in the underlying reinsurance rates may result in a very limited contract boundary, which could have other implications for that business.

Rate guarantees cost money and have capital implications, and the above concepts should be augmented by a proper quantification exercise to show that the insurer is (or is not) better off with the guarantee.

Merely wanting a guarantee, simply because a risk exists, is not sufficient justification for insisting on one.

As in the discussion of profit sharing, we saw that the mechanism isn't universally beneficial, but rather it depends on whether you're focusing on potential good outcomes or bad outcomes for the portfolio. Similarly, while soft guarantees (where rates can increase, but to a maximum level) or hard guarantees (rates are locked in forever) do appear to involve a

greater transfer of risk, the factors which determine whether such guarantees are worth it, include:

- The remoteness of the guarantee
- The cost of the guarantee
- Whether you're interested in protecting your downside, or enhancing your upside.

For example, a hard guarantee on reinsurance risk rates for a long-term cancer portfolio is likely to be quite expensive. This would prove worth it in an extremely adverse claims outcome, but the high cost of the guarantee means that the experience would have to deteriorate quite far before the insurer even breaks even.

It is useful to note that North America is quite different from Europe in this regard, both in terms of the availability of guarantees, as well as in terms of the existence of options to terminate at some future time (which is further complicated by rate guarantees).

- In North America, it's common for there to be contractual recapture or retention-increase options, and the cost and benefit of these terms should be evaluated
- Rate reviewability is common in the US, which has led to the emergence of clauses such as "comparable commitments", which means the reinsurer can only raise rates if taking similar rate-review action on similar reinsurance portfolios with other clients
- Another feature is to use wording that makes reinsurance rates notionally reviewable to avoid higher reinsurance reserving and capital requirements for guaranteed rates. That said, there may be a fair number of constraints around such rate reviews, which serve to limit the true nature of reviewability. It is essential to place a realistic and not over-optimistic value on the apparent right to review rates
- Captive reinsurance entities and special purpose vehicles can be used when financing redundant reserves (so-called XXX or AXXX transactions). Reinsurance will need to take into account the difference between the rates which realistically reflect the risk inherent in the business, compared with the excessively conservative rates which underly the capital obligations of that portfolio.

When considering reinsurance premium rate guarantees on a health portfolio, some simple steps might include:

- Get reinsurance rates on non-guaranteed, soft guarantees and hard guarantees
- Clarify which scenario you are looking to focus on (consider the Profitability, Volatility and Solvency vectors as a starting point)
- Look at what the P&L looks like in a good year, average year, bad year, really bad year, etc.
- Consider what impact a bad year might have on pricing in later years, to ensure claims recoveries aren't merely paid back through higher premiums thereafter

- Estimate how bad experience had to get before the loading you're paying for the guarantee is break-even with the additional benefit you're getting from the guarantee.

We re-emphasise that there is no one-size-fits-all recommendation, and each reinsurer's objectives and targets, tolerances and thresholds will determine what is best for them.

Arbitrage may provide additional value

Any reinsurance treaty should be a win-win for both parties at inception, with the value being bought contributing to the insurer's objectives, and the value being sold contributing to the reinsurer's objectives.

Sometimes, value is generated through arbitrage opportunities that are available to the reinsurer which are not directly available to the insurer. An optimal reinsurance program should leverage this, as appropriate.

It helps to look for sources of arbitrage that lead to the insurer and reinsurer having a different view of the business (which usually involves the reinsurer having a more favourable view of at least one element of the business than the insurer). This could be driven by:

- Different assumptions (like base mortality, mortality trends, lapses)
- Different investment return assumptions, perhaps because the reinsurer has greater regulatory freedom (or direct access) to invest in assets more appropriately, or indeed more appropriate assets
- Different capital requirements (perhaps driven by an internal model, diversification, or regulatory jurisdiction), which means a lower cost of capital can be charged
- Differences in capital costs, funding or liquidity charges, target profitability
- Difference in KPIs, or pricing and valuation and accounting bases (such as targeting volume vs profit, top-down vs bottom-up economic assumptions, Solvency II vs NAIC basis, market-consistent vs traditional EV, USGAAP vs IFRS17).

In addition to the above items, we accept that there are other forms of arbitrage that might be against the spirit of regulation or legislation (or even be explicitly illegal), like some tax avoidance arrangements. Naturally we are only recommending that legitimate and reasonably sustainable structures be considered.

Complex treaty structures

Structuring a treaty to meet the specific requirements of both an insurer and reinsurer can have benefits, but like any customisation, this requires time, effort and resources. In deciding whether to opt for a standard treaty or something more bespoke, a company should try estimate what impact the differences might have on cost, capital, elimination of

ambiguity, or other. There may indeed be circumstances where it is preferable to use to tried-and-tested standard solutions rather than trying to develop new creative solutions.

An example of an overly complex arrangement might be a layered profit-sharing arrangement (where different proportions of profit are returned depending on how profitable the treaty is). If the treaty is expected to be highly profitable, then all those layers could simply be condensed down into a single layer.

As the old saying goes, things should be kept as simple as possible, but no simpler.

Conclusion

While we have presented several examples in this chapter, no hard-and-fast rules are to be deduced. The point is that these are all situations where there should be an attempt to think deeply about the matter, and then determine quantitatively and qualitatively what the optimal position is.

Many of these can be considered once, and then built into the Reinsurance Framework for onward implementation, but subject to dynamic review. Others, on the other hand, need to be considered each time a treaty is entered into.

5. Contract Wording

Introduction

In common with other formal business arrangements, a reinsurance treaty serves as a legally binding agreement between the parties. The agreement serves to fully describe the duties, roles and responsibilities of each party that are necessary in order for the reinsurance to operate effectively and allow the parties to realise their respective business aims. Contract wordings have historically been dealt with late in the reinsurance buying process, and may still be perceived as procedural rather than an area requiring focus and attention during the earlier stages of the process.

Assuming that the reinsurance structure has been selected and all parties are aligned in their intentions, then agreement on the wording of the contract should be achievable. Indeed, it's not uncommon for there to be agreement between the parties "subject to contract" (or "subject to final agreement on contractual terms"), on the assumption it is simple to finalise matters.

In practice, there are many potential pitfalls that can lead to a poorly drafted reinsurance contract, exposing the parties to potential business losses and difficulties in the future.

An inadequate contract will at a minimum be a confusing document which is subject to uncertain interpretation. If more serious defects are present, then formal legal advice or arbitration may be necessary in order for issues of interpretation to be resolved. In the worst-case scenario, the contract may be worded so badly such that the only approach available may be a court hearing in order to determine how the contract should operate in the given circumstances.

These possibilities are all likely to lead to increasing levels of business disruption and cost, and a potential breakdown of the insurer/reinsurer relationship.

In this chapter we consider the potential mistakes and inefficiencies that can occur in treaty wording, and we suggest how these might be avoided. It is written from an actuarial point of view, while drawing on the experience of industry practitioners who have taken different roles in the reinsurance implementation process. We have also consulted with specific reinsurance contract wording experts to obtain their views.

Some of the observations described in the following sections are based on common law rather than civil law experiences. Since this paper will be read in many countries, legal advice should always be taken for specific interpretations in your jurisdiction.

Getting the basics right

There are many problems that can arise through a simple failure to get the basics right.

Actuaries are rarely adequately trained in the basics of Contract Law, and the implications of the wording they recommend might not be fully appreciated.

For example, there may a difference between Covenants and Warranties, and misclassifying the responsibilities of the one party can have significant repercussions for how the treaty operates.

Members of the Working Party have seen many instances of treaties where conflicting definitions of terms appear. For example, a word may be defined (with a capital letter) in the definitions section, then later used without a capital letter – begging the question as to whether it should be interpreted according to the definition or the more generic use of the word. And then within the same treaty, the word could be defined again in context (with a capital letter) using a slightly different definition to what was written earlier.

Clauses might also simply not be sufficiently explicit. For example, a treaty might include a clause that allows an insurer to increase their retention at 5% per annum, but it might be silent on whether that is cumulative and permitted to be compounded in retrospect. Should an insurer who hasn't increased their retention for 10 years be allowed to a one-off 63% increase as catch-up?

Parties to the agreement should be clear about the implication of various definitions. For example, a number of insurers were convinced that their cat stop-loss reinsurance included protection against a pandemic, such as COVID-19, but in the last year or two they realised that the definition only included an infectious disease outbreak following a natural catastrophe (for example, a typhoid outbreak following a flood).

The number of potentially ambiguous clauses has grown as reinsurance treaty wording has developed over time. Such terms may include "reasonable opinion", "at the discretion of the reinsurer", "in line with the actuarial experience", "material impact", "significant change" and "reasonably expected to be". Several of these terms have specific interpretations from case law examples and precedents. For this reason, they should only be used when they are well understood by those drafting and agreeing the reinsurance treaties. If used haphazardly, such terms can lead to unintended outcomes for one or more of the parties to the contract.

This topic also has links to the legal jurisdiction of the treaty, thus driving which case law, examples and precedents will be drawn upon in arriving at an interpretation. See below for further discussion of jurisdiction.

If any reader of a treaty feels that the interpretation of any specific term may be ambiguous or open to challenge, then it is in the interests of all that a specific definition be inserted. For example, clarify that "material impact" is when the resulting change in Solvency Ratio is at least 5% over the prior year.

More specifically around the use of terminology, we think it's useful to explore briefly wording around the efforts expected from each party with respect to the ongoing operation of the treaty. Typically, a treaty would include phrases like: "make efforts", "make reasonable efforts", "make all efforts" and "make best endeavours". Each of these implies something different, and if the wrong one is used it can have significant impact on how the treaty operates. For standard reinsurance of traditional business, it appears more common to be using "makes reasonable efforts". If one party desires a higher level of effort or action in a specific event, then they should clarify their expectations explicitly in the contract.

When considering the use of such terminology, it is generally sensible to involve a legal expert in the discussions to assist in choosing the correct wording.

Dates and Times

Date definitions is an area prone to such problems, and this can lead to unintended adverse consequences. For example, a treaty may feature a collection of signature date, effective date, inception date, commencement date, new business date and coverage date, but then "start date" might be used, without any clarity on which particular date that might be.

Similarly, many treaties aren't even clear when specified dates and times are mentioned in the text, whether these are included in or excluded from the defined range.

It's common to have a treaty signed on a particular date that is later than the date of the evidenced agreement, but to include business written prior to this date – which is perfectly acceptable. However, the deliberate backdating of a treaty – implying it had legal force before it was even conceptually agreed (let alone signed) – is dangerous and may even risk criminal implications. If a treaty is agreed and signed in early January, for example, then that treaty cannot have an impact included within the 31 December financial statements, as the treaty was not effective on that date. It is irrelevant whether the treaty is signed before the actual financials are finalised, the point is backdating a treaty prior to a recognition date must be avoided. We note that such backdating concerns apply in respect of regulatory, accounting or taxation requirements more so than a legal requirement, since the validity of the legal contract is established upon the contractual agreement between parties.

In recent years there has been a push from regulators to execute reinsurance contracts in a timelier fashion to minimise the lag between risk coverage dates and signature dates, and thus give clarity and certainty to the terms of the reinsurance contract. Reducing the time lag seeks to minimise the possibility of events occurring in the interim that would have been captured by the treaty but then give rise to dispute on coverage without a signed document. From a non-life reinsurance perspective, the court cases around whether the attacks on the World Trade Centre on September 11th, 2001, were deemed one event or two, and thus how much should be paid, are good examples of this. Singapore, for example, has a one-month signature deadline, and the Regulator must be notified of any treaties not signed within one month of the coverage's effective date.

Business context and the long-term nature of reinsurance

New reinsurance contracts are typically entered into within the context of a positive and growing partnership between insurer and reinsurer, and this can lead to a degree of complacency or unwillingness to confront more difficult issues that could arise during the term that the contract will be in-force. There may be a broad assumption that the contract will work out well, no matter what the future may bring.

If the reinsurance buying process has featured a heavy degree of actuarial input, then a group-think effect may occur where there is a mistaken belief that as the contract makes sense to an actuary now, then it will be legally clear and binding in all circumstances at a later stage.

The technical nature of actuarial work can lead to an overemphasis upon defining the precise mechanisms for transfer of the biometric risk at the cost of introducing higher levels of operational risks into the agreements. Contracts may place obligations on firms that cannot realistically be achieved with the existing resources available to the parties, and unreasonable penalty clauses, where the inevitable happens, might be included.

Another potential complication arises from the fact that those involved in the initial treaty drafting process may no longer be at their companies when it comes to enforcement of the terms later on. There may be implicit knowledge not captured in sufficient detail within the treaty as a result. The long-term nature of life reinsurance also leads to the risk of reinterpretation over time as new case examples or legal precedents emerge. Problems may also arise at a future date if, for example, a professional with primarily non-life expertise takes responsibility for a treaty and interprets the terms of a treaty differently, through the lens of their non-life experience which might have different conventions. For this reason, all the pertinent details required to effectively run the treaty by any knowledgeable insurance professional should be captured in the final contract and supporting documentation.

Reinsurance contract wordings have also been observed to be drafted in a reactive rather than proactive context, due to a failure to anticipate future evolutions that may impact the operation of the treaty. Such evolutions may originate from the (re)insurance industry (eg. solvency regime changes) or from the broader business environment (eg. the introduction of new data protection laws). Change is expected, and so a treaty that once appeared to meet all necessary requirements may at a future date be found to be non-compliant with the prevailing laws. This issue is difficult to overcome as all future business environment changes cannot be readily anticipated, but wider awareness of forthcoming changes and other possible shifts can improve the robustness of treaties. As regulations and laws evolve over time, it may be necessary for the original documentation to be amended by way of an addendum to ensure ongoing compliance with the prevailing regulatory and legal environment.

Bringing a life reinsurance treaty to life

Once the treaty wording is complete, the process of binding the parties may also give rise to problems. Actuaries and other non-legal professionals involved in the treaty process may have a poor understanding of the legal notion of “offer and acceptance”, and this is further complicated by standards of “offer and acceptance” differing between jurisdictions. The business practice of marking preliminary offers as indicative or non-binding is, strictly speaking, a misdirected exercise in certain jurisdictions as no such type of offer may exist in the applicable contract law. Courts will however generally respect such wordings if made clear on offers between businesses.

From a purely legal standpoint, adding a signature to a completed treaty is not strictly necessary to bind the parties to the agreement. Many judicial systems do not require signatures in order to prove that legal obligations exist between the parties. Signatures are nevertheless useful in evidencing the intent and thus binding nature of the agreement between the parties, and may be necessary to satisfy regulatory, accounting and tax requirements. Some parties insist on having two signatures to evidence their commitment, but this also holds no legal significance since even one signature is generally sufficient to evidence the commitment of a party. Further to this, a binding signature may even be provided by an unauthorised employee who is not a specifically appointed representative.

More important than a signature is satisfaction of any specified “conditions precedent” that may be outlined in the treaty. Most common of these is a requirement for settlement of the reinsurance premium before coverage can begin. Not complying with such a requirement may expose an insurer to significant losses in relation to a treaty which they thought was effective through signature, but which failed through condition precedents not being met.

Similarly, a reinsurer who accepts premiums on an unsigned treaty for a period of time may, legally and practically speaking, be unwittingly demonstrating acceptance of those terms.

Side Letters and Addenda

A side letter is a legal document which exists apart from the main treaty. The presence of a side letter can give rise to problems, from lesser issues like complexity in interpretation, to bigger issues like direct contradictions.

Note that a treaty addendum is not a side letter, it is deemed to be an extension of (and therefore a part of) the treaty, and they should be read together. The addendum amends the treaty to capture new terms agreed between parties and is generally required to be in written form.

In certain circumstances, there may be legitimate business reasons for using a side letter, for example where a main treaty is in place between an insurer and a panel of reinsurers, with the side letter used to further customise the specifics between the insurer and a specific reinsurer, without infringing upon the terms for the other members of the panel.

If a side letter must be used, then it is crucial that the terms do not override or invalidate the terms or the intentions of the main treaty document.

Under no circumstances should side letters be used as an apparatus to circumvent or hide detail from specific stakeholders, which could have criminal implications.

There is one example from an Australian Royal Commission where it was identified that although there was a treaty which appeared to transfer risk away from the cedant, there was a written side letter which said that the insurer would never make a claim under the treaty, which clearly completely defeats the purpose of the treaty (which was nevertheless used to impact the financial statements being published). Further, it emerged that there was a verbal side letter where the two parties agreed that they would never exercise their rights under the written side letter.

These days, many treaties have a clause which states that the treaty is the entire treaty, and that (other than addenda which are deemed part of the treaty) there are no other documents which should be taken into account when considering how the transaction should be governed. This is intended to avoid concerns around non-disclosed side letters.

Legal jurisdiction

The choice of legal jurisdiction for a reinsurance treaty may seem straightforward, but there are also potential pitfalls in selecting one territory over another.

At the very least, the parties must ensure that they are each legally allowed to enter into a treaty in the given jurisdiction. The ability to do so may be limited to those that have satisfied local laws, regulations and licensing requirements. Parties need not only consider whether they individually meet these requirements, but that their counterpart also complies, otherwise they may be entering into an agreement that is null and void.

Assuming that the parties meet all of the requirements, the selection of the jurisdiction remains important as it will directly influence how the treaty wording is applied and any specific examples or precedents that may apply in interpretation.

When both insurer and reinsurer are operating out of the same country, it's common to use that jurisdiction. When the parties operate out of different countries, it's not uncommon to use the insurer's location as jurisdiction. Where a particular country has a less developed legal system, then the reinsurer's jurisdiction, or indeed a separate "preferred" jurisdiction, might be agreed between the parties. The choice of dispute resolution mechanism would also be considered by the parties when agreeing on the jurisdiction.

The international nature of reinsurance has led to particular jurisdictions being favoured over others, irrespective of the domicile of the parties. The laws of England and Wales and New York state law are two such jurisdictions. Both are seen as offering a degree of standardisation in drafting, and more importantly are perceived as having effective dispute

resolution systems. The variation in laws between states in the US gives further impetus for the use of New York state law to achieve consistency in interpretation across all states.

In the developing Middle East reinsurance market, Oman has become the favoured jurisdiction. In Asia, Hong Kong and Singapore have more commonly been used.

When it goes wrong

As we noted earlier in the chapter, new treaties are generally entered into against a positive backdrop of two companies seeking to work together. But even with the best intentions, problems can and do occur.

Problems may arise through the normal course of business or may be as a result of specific wordings in the contract, with one of the parties being unaware of the potential consequences. Issues often arise in periods of run-off rather than periods in which treaties are open to new business.

At the simplest level, one party may simply not be complying with the basic treaty provisions, such as timelines for reporting cycles. For matters such as these, in older treaties there may not be any clear penalties for non-compliance and the issue may even seem trivial to one party, whilst having a material effect on the other. The quality of reporting data may also be substandard, certainly below that promised in the treaty. In these circumstances, the approach to dispute resolution would likely be a dialogue between the operational managers responsible for the ongoing workings of the arrangement. Escalation to senior management may be pursued if no resolution can be obtained. This mechanism whereby a suitably senior individual (or preferably a role, to allow for personnel changes) is identified in the treaty as a point of contact for resolving matters arising is a more recent development in reinsurance treaty wording. It provides a useful course of action to resolve matters arising in the day-to-day management of the treaty without involving costly or complex external resolution methods.

Another approach is to reference an Independent Expert who would be engaged to advise upon and provide certainty in disputes related to parametric items rather than areas of interpretation of judgement. Examples here might include premium rate adjustments or termination fees. Under this approach, the parties to the treaty will propose their own assessments of the appropriate parameters, and then all relevant data will be provided to the Independent Expert, who will then make a recommendation on what they believe the true value should be. The Independent Expert is usually selected by agreement of both parties at the time of dispute, as a senior and experienced individual with the capacity to provide a neutral view on the item under dispute. The treaty should of course be explicit about whether the determination by the Independent Expert is binding on both parties.

Other areas which ultimately could be agreed between the parties, potentially with an Independent Expert, includes disputes about profit commissions and rights to recapture or

to reprice business. To best avoid the risk of such disputes, those drafting treaties must strive for strictly defined and well understood terms. More broadly, wording around termination procedures should have special attention such that it is clear to all the circumstances under which the arrangement can be terminated, by whom it can be terminated, and how the economics are settled depending on the reasons for termination. Effective winding up of the treaty will hinge on these specific clauses and so they merit careful consideration during the drafting stage.

If disputes cannot be solved through co-operative means, then as a final option there are the options of arbitration or litigation, the choice of which will depend on how the treaty was drafted.

Arbitration was historically the favoured approach, and treaties often included either an arbitration body or arbitration guidelines, which would often follow the same jurisdiction as the treaty. More recently, this is becoming less popular as it is no longer viewed as the most economical or balanced approach, as it can permit bias on behalf of one party in certain jurisdictions.

In the past, litigation-based approaches were not widely adopted across all jurisdictions, although in recent years there is growing use of litigation to settle disputes, specifically in the life & health space. Compared with the past, some parties view litigation as becoming a more efficient process in resolving disputes. Notwithstanding this, like all dispute resolution processes, litigation still has the potential to be time-consuming and expensive, especially if the jurisdiction is US-based. Companies may also have concerns about the associated reputational and relationship damage that may result from a court case, which continues to act a deterrent to using litigation over arbitration, which preserves confidentiality.

The world has modernised

There are three areas where it appears that treaties have generally still not modernised.

Firstly, one outdated practice that persists in reinsurance treaties is how Notices are to be delivered, including reference to postal mail delivery services, or fax. This requirement appears to be very inefficient in today's digital age, where the majority of business communication is conducted by email. The historic preference for physical delivery was motivated to evidence receipt of the notice, however there are now means by which this can be achieved when utilising purely digital approaches.

Secondly, building on the above, we note that companies are still heavily reliant on wet signatures, when electronic signatures are becoming increasingly common, especially after the changes witnessed during the COVID-19 lockdowns. Not all countries allow electronic signatures to be used this way, but it is increasingly likely they will in future. (It's also not inconceivable that at some point the reinsurance market will move towards the use of

crypto-based smart contracts, however further development is required before such a stage is reached.)

Thirdly, in the confidentiality clauses, we still sometimes see the requirement that parties are required to delete all instances of certain data in certain circumstances. This ignores the reality of how backups are made in modern IT environments, where prior backups – for security reasons – simply cannot be tampered with, and therefore such data cannot be deleted. In response to this development, it is becoming more common that additional wording is provided to permit the retention of non-retrievable back up files in recognition of such practicalities.

Conclusion

A key conclusion of this chapter is that we cannot anticipate everything that the future holds, and therefore our treaty wording should be as robust as possible to events emerging during the life of the treaty.

Multiple experts from different disciplines should be consulted, conflicts should be anticipated, and wording should allow for many different possible scenarios.

It should also be recognised that even if the parties agree to “optimal” wording in the contractual documentation, the passage of time and business developments will likely give rise to the requirement for addenda documentation to be implemented. It should also be noted that even in the presence of a contractually agreed reinsurance structure and terms, one party may end up entering into a dispute irrespective of the agreement, and in such instances the presence of the dispute resolution mechanics would be an important tool in managing such a scenario.

6. Managing Reinsurance In-force

Introduction

While creating a Reinsurance Framework and writing new treaties accordingly is an essential part of the process, the hard work does not stop once everything is up and running.

A well-run process will include both monitoring and management of the program.

- The 'macro' view for monitoring an in-force program is to see how it continues to meet an insurer's various objectives (both quantitative and qualitative). At a detailed level, monitoring could include experience analysis (with and without reinsurance), consideration of how large policies and large claims are being handled within the program, turnaround times on underwriting and claims support, and more.
- The 'micro' view for management of the in-force reinsurance portfolio, includes many options such as rate reviews, retention reviews, re-structures, profit commission alterations, contract wording improvements, changes to the counterparty credit risk mitigation tools, treaty terminations, and more.

Below we explore reasons why in-force treaties are often not reviewed, address mistakes made when reviewing them, and propose actions that are often overlooked in the process of in-force management.

Reasons seen for not reviewing reinsurance treaties

Reinsurance might be focussed on new business

A common view is that the greatest value from reinsurance is to be gained through implementing on new business. There may thus be a lack of incentive to manage reinsurance on the in-force portfolio.

There may also be a focus on reviewing "troublesome" treaties only, or only those with large exposures. This may lead to missing out on quick wins or systemic issues that may otherwise fall under the radar for review.

Instead, an insurer should be willing to devote resources to reviewing treaties on an ongoing basis. To ensure this happens, the overall Reinsurance Framework should include such requirements, with a clear allocation of responsibilities to ensure that this happens.

The insurer will likely already have significant resources managing their in-force, which could be leveraged for synergies in the ongoing management of the attaching reinsurance.

No clear responsibilities

While internal teams may have a stake in the management of the in-force reinsurance portfolio, it may be unclear exactly where the driving responsibility lies. This can occur both on the insurer's and the reinsurer's side, which increases uncertainty overall.

Even if the responsibility for monitoring and management is explicitly stated, there may still be a conflict of interest or a lack of expertise. For example, a valuation team may prioritise setting aggregate reserves, and not have the ability to consider assumptions at a product level, whereas a pricing team may have the granularity of assumption required, but not the expertise to project a balance sheet.

The Reinsurance Framework should be clear that not only is ongoing management required, but also state who should be doing it, and how often. There should be with reference to both business-as-usual monitoring as well as deep-dive reviews, and it should also extend across the whole portfolio on occasions.

Influence from the reinsurer or the treaty

In-force management doesn't just refer to changing the structure or pricing of existing treaties, it also includes monitoring so that there is at least an awareness of where treaties are meeting, exceeding, or falling below expectations.

Therefore, regardless of whether a treaty allows changes to terms and conditions, or indeed whether a reinsurer is willing to respond to such an engagement, an insurer should aim to be clear on what they would do, if they could.

When treaty wording doesn't support any changes, or the insurer worries about the perception from reinsurers if approached to change their current arrangements, there may be a reluctance to proceed with reviews.

There will also be occasions when the reinsurer will initiate reviews – to the rates, the wording, or the structure. On such occasions, the insurer should be clear on their objectives and how the treaty is performing. This will enable them to focus their discussions on seeking improved commercial outcomes, in line with their current reinsurance strategy.

Companies could engage in collaborative monitoring and management via a reinsurance dashboard (treaty and portfolio) to be provided by each of their reinsurers, and to meet regularly (at least annually) for discussions.

Keeping an open line of communication within the relationship will likely make this easier in a time of change. There may indeed be efficiencies on the sides of both the reinsurer and the insurer from restructuring, renegotiating, or terminating a treaty.

Review of in-force treaties

Once the appropriate level of focus is given to in-force management, there are many aspects of every treaty that may need to be reviewed.

Continued optimality

It may be that the reinsurance on a back-book was optimal at the time it was taken out, but may no longer still be so. For example, the capital constraints that were initially present may have disappeared as the insurer has grown, new business volumes reduced over time, or with capital having been released elsewhere. Alternatively, a book in run-off may find that the fixed cost of managing reinsurance, or reduction in average capital efficiency, increases the relative cost on each policy, making the reinsurance less attractive.

As we've discussed in our section on a quantitative framework, the vectors are a useful way of remembering the multi-dimensional nature of metric optimisation. As a company's targets, tolerances, and thresholds change, this affects what impact the reinsurance treaties are aiming for. Similarly, changes in an insurer's financial performance and position will affect the relative prioritisation of the different vectors.

By reviewing in-force treaties against the current rationale for reinsurance, an insurer can confirm whether optimal value is being gained from the treaty.

M&A activity should also act as a trigger to review in-force reinsurance to ensure that all the legacy reinsurance treaties are still appropriate for the combined business. This would need to be considered within the contractual rights of the treaty, and where changes are not possible then the deficiencies should be understood.

Where it is difficult to modify treaties on a contractual basis, it might still be possible to nevertheless implement certain mutually agreed changes over time. If this is not possible, an insurer could make a point of, over time, shifting new products to new treaties, while keeping the treaty open to new business on existing products.

Actions to manage the in-force

Scope for recapture

Sometimes it is advantageous for one or both parties to terminate a treaty. This might include, for example, when regulatory changes make the mechanism completely ineffective. Or sometimes an insurer has got a large number of treaties, many of which are small, such that the extent of risk transfer has been outgrown.

In such circumstances, a termination could be suitable even if the treaty wording does not allow it, is unclear, or is completely silent on termination. Perhaps the treaty is so old there may not be a complete set of documents readily available.

Historically, small treaties may have been left in place because the effort to terminate outweighed the perceived benefit of termination. That has been changing at the time of writing this paper because companies moving towards IFRS17 implementation are aware of the effort required to transfer treaties (for both insurer and reinsurer) into the new framework, and a "clean out" of smaller or irrelevant treaties is becoming more common.

If a decision is taken to initiate termination, the treaty wording should be assessed for the details, including notice period and possible payment of termination fees. Note that the termination fee could be payable in either direction, depending on whether the treaty is profit- or loss-making. There is often little practical difference between the treaty being silent on termination, and the treaty having some vague wording about both parties having the right to enter a discussion to agree terms of a termination in future.

This is exactly why the Reinsurance Framework should ensure that all treaties are future-proofed with respect to termination. This might involve either agreeing on an automatic termination (with or without a termination fee) at a pre-agreed date, or perhaps when the treaty volume falls below a certain threshold. If termination is to be a future option at an unspecified date, the treaty should at least be absolutely explicit on how the termination value will be calculated (present value of what? at what discount rate? best-estimate assumptions as mutually agreed? mechanism for independent actuarial decision if "best-estimate" is not aligned?).

Change in premium rates

There may be value in having a reinsurance treaty from a Volatility or Solvency management perspective, but there is the potential that experience has evolved such that the cost (foregone profits) has become too high to justify these benefits.

Sometimes treaty rates are fully guaranteed for the lifetime of the portfolio, in which case it is reasonable that the reinsurer would take both the upside and downside of the portfolio. Just because experience has improved doesn't entitle the insurer to reduced rates, nor to terminate without penalty. That said, a negotiation is often possible, particularly where the reinsurer is still seeking new business from the insurer on other products.

It's also possible that rates are non-guaranteed, but if there is limited clarity on how the rates are to be reviewed then it may still come down to a potentially difficult negotiation.

Problematic rate-review mechanisms we have seen in treaties include the following:

- Rates can be increased by the reinsurer when experience deteriorates, but can't be reduced by the insurer when experience improves (not to say this is wrong, but it's a one-sided option which should be reflected in the pricing)
- Rates can (at least in theory) be changed by an arbitrary amount, without reference to the actual portfolio's experience

- One party can force the other to terminate the treaty (and pay an unattractive termination fee) by artificially inflating the price increase being demanded
- The termination fee is designed to lock in a "reasonable" level of profit for the reinsurer, even when it's being terminated because experience is bad
- A reinsurance treaty may insist on a follow-the-fortunes basis, such that reinsurance rates automatically go up when the base policy rates go up, and similarly will only be reduced when the base policy rates are decreased. While both parties may be comfortable with this this approach due to its simplicity, it's not necessarily optimal. Additionally, while there is some sense in this for a pure quota share arrangement, when it's a surplus treaty such that the insurer's and reinsurer's business mix is different, the follow-the-fortunes approach doesn't always make sense
- A reinsurer may want to increase rates on a profitable treaty because of poor experience elsewhere in the industry (although not with the specific insurer, or despite a lack of credible data volumes from that insurer)
- There is limited clarity in the treaty on who can review when, how, using what information, which can lead to a heated debate through the course of a review.

The benefit of an active in-force process is that an insurer is able to identify treaties where rate reviews would be sensible, and whether or not they may be successful. Through the actuarial cycle, this should feed into the Reinsurance Framework such that a more suitable mechanism (and treaty wording) is used in future to avoid similar problems.

Profit commission

In managing an in-force treaty, some issues arise often so are highlighted here:

- The profit-sharing arrangement may be complex with multiple layers reflecting different levels of profitability, but the actual profit may be stable at the top or bottom end of these layers, in which a simpler arrangement can be implemented without fundamentally changing the financials
- Losses carried forward, or contingency reserves built up, may materially reduce the risk transfer of the treaty, to limit the genuine value of the risk transfer
- Profit sharing may only be paid if the treaty is open to new business. While there is sense in limiting profit sharing when the portfolio is small and experience is likely to be too volatile, making it operate at the "if there is new business" level and not at the "portfolio size" level could act as a one-sided lock-in, since the insurer stands to lose out on very substantial future profit shares should they close the treaty to new business, even if the terms of the treaty are far from market competitive. This is potentially hard to change, but a discussion should nevertheless be had.

Whether or not it is possible to improve the above points on the in-force reinsurance portfolio will depend on contractual terms and the negotiating positions of the parties. However, managing the portfolio will at least flag these as points of concern, which should

then feed into the Reinsurance Framework so that they don't re-occur (unless of course they are desirable to both parties, of course).

When changes are made

Following a formal review, an insurer might increase their retention or terminate a treaty, in co-operation with the reinsurer. But in the years that follow, perhaps there is a bad period during which it appears that the company is worse off for having made these changes.

Indeed, we are aware that many insurers are reluctant to make change to in-force treaties for fear of the judgment that might follow such an outcome. Having a more robust framework for making decisions around the reinsurance management of the portfolio should reduce the risk of surprises further down the line.

However, we should be aware that there is a difference between risk and loss, and the insurer should be equally concerned about not changing in-force treaties when analysis demonstrates it would be the best course. Similarly, there is a difference between designing what is prospectively deemed to be optimal reinsurance, and retrospectively determining what would have been best to implement.

Top-down analysis

While some reinsurance treaties may appear to be of poor value to an insurer in isolation, they may in fact play a key role in keeping the business within its stated risk tolerances and maintaining relationships and accounting systems to facilitate potential future business.

For example, triggering a recapture of a protection treaty may result in a firm taking back both lapse and mortality risks. Whereas the mortality risk may have appeared expensive in isolation, by recapturing both risks, the impact on capital and risk accumulation may have unintended consequences on the overall business.

Also, while a treaty for a local insurance entity might appear to be appropriate for their risk appetite, when all these treaties are accumulated up to the regional or group level, the wider company may end up significantly over-reinsured. There are ways of dealing with this, including intragroup reinsurance programs or regional profit shares.

During COVID-19, at a time when claims on both mortality and some forms of morbidity are increasing, companies are finding there is also an impact on lapse rates, equity markets, interest rates, and new business volumes. So, while there might have been a decision (intentional or inadvertent) not to reinsure pandemic risk, the accumulated losses in other areas might suggest in future that this type of decision should be reconsidered.

As a result, insurers should perform both a top-down and bottom-up analysis of their reinsurance. As well as assessing the value of each treaty in isolation, it will be important to review the reinsurance across the whole business. It is important to understand how the existing treaties fit together and impact the overall level of risk taken by the business.

Alignment of interest

While some reinsurance treaties are purely transactional in nature, generally we might expect that both the insurer and the reinsurer would be aligned in wanting a sustained mutually-beneficial relationship – whatever their criteria are for defining "beneficial".

This will be addressed further in the following chapter, but in terms of managing the reinsurance in-force, it's worth making a few comments here.

Note that having a treaty which is loss-making for the reinsurer does not necessarily threaten the sustainability of the relationship. Indeed, if a reinsurer never loses money on any treaties, this may result in a re-assessment of how and why reinsurance is bought.

This encourages the parties to align in their efforts to generate the most "value" out of the relationship in both the short-term and the long-term.

Administration of reinsurance treaties can be complex for both, especially with the additional requirements under IFRS17, for example. Therefore, there is value to both parties in ensuring that treaties are running as intended, that claims are being submitted and paid, and that deadlines are not being breached. Standardisation of aspects of the relationship may be beneficial, such as the processing of reinsurance accounts.

With reliable and efficient administration, both parties will have a clearer picture of the workings of, and benefits from, the existing arrangements, deriving a mutually consistent basis for understanding the in-force portfolio. Inadequate information sharing between the parties may produce a value-imbalance in the short-run, which cannot be sustained.

Through an ongoing relationship, the reinsurer may also be able to provide expertise on in-force management strategies such as customer retention techniques. These may be shared at no additional cost due to the win-win impact on the portfolio for both parties.

Conclusion

Optimising a reinsurance program doesn't just involve implementing ideal treaties, but also entails the ongoing monitoring and then management of the in-force reinsurance portfolio (which enhances the overall performance of the gross-of-reinsurance portfolio).

Even when changes are not possible, perhaps because of the treaty wording, a company should be aware of where the reinsurance is falling short of ideal, and by how much.

And certainly, the actuarial cycle that would be built into the Reinsurance Framework should ensure that any problems, whether they are solved or not during the in-force management process, are avoided in future by setting explicit guidelines for future treaties that are to be implemented.

7. The Insurer-Reinsurer Relationship

Introduction

Just like any business relationship, those between insurers and reinsurers benefit from clear definition and regular review.

With several reinsurers operating in all the major markets, it would not be sensible to believe that each can be a true and symmetric partner for all insurers. Conversely, viewing all reinsurers as pure transaction counterparties on a treaty-by-treaty basis can lead to significant missed opportunities for both companies.

Below we explore common issues that arise as a result of a lack of attention paid to the type of relationship insurers currently have and aspire to have with their reinsurers.

The spectrum from “eternal partner” to “occasional transaction counterparty”

Trusting a tried-and-tested counterparty as sole or primary partner is something quite often seen when it comes to reinsurance services and transactions. Rightly or wrongly, the concept of a single “go-to” reinsurer exists for many companies. While strong relationships undoubtedly carry significant value, they may lead to a narrow-sighted view of what the reinsurance market can offer, in terms of products, services, price levels, risk appetite, etc. The favoured reinsurer may once have been the cheapest, or offered the best package the last time it was tested in a competitive environment. However price levels and product offerings change over time, so without testing the competition, complacency can naturally creep in.

Members of the Working Party have witnessed situations where a new reinsurer was looking to get a share of the insurer’s business, but where the insurer felt sufficiently obliged towards their existing reinsurer that they felt they needed to ask permission from that reinsurer to bring in another.

What the partnership actually means, and whether that definition is symmetrical between the insurer and reinsurer, is also important. For the insurer, the implicit expectation may be that a true partner will always be competitive, or indeed the most competitive, but the reinsurer may characterise partnerships along different dimensions. For instance, a reinsurer may pledge to take its best innovations in a specific area to a certain partner or always endeavour to allocate time and resources to projects coming in from that insurer.

At the other end of the spectrum, some life insurers regard reinsurers as transaction counterparties only. Insurers that exhibit such buying behaviour will put most, if not all, reinsurance opportunities to a competitive tender. Such behaviour is often driven by the

belief (or perhaps governance process that claims) that a competitive process will guarantee the best price. This, however, may not always be true.

Some reinsurers, for instance, may be reluctant to participate in, or put much effort into, tender processes due to increased competition and thus the smaller perceived likelihood of eventual success (unless pricing basis errors have been made!). An area that is sometimes overlooked is the scarcity of pricing resource that reinsurers have, as a result of which long tender processes with limited chances of success may be de-prioritised. This could leave the insurer with a much-reduced pool to choose from, with possibly the most suitable counterparties having fallen out at the very start.

Further, frequent tendering and constant changing of reinsurers would necessarily hinder the formation of deep and trusting relationships, and interest from reinsurers in securing the business. Long-standing relationships can be invaluable in the crucial part of treaty negotiations once the tender has completed, as well as in dealing with potential future issues such as amendments.

Execution risk can be much reduced when dealing with a known party. Anecdotal evidence exists of cedants abandoning protracted or derailed tender processes (especially in the field of structured solutions, corporate restructure, or M&A activity) part-way through, only to go exclusive with the "safe pair of hands" – which would not have necessarily been the chosen partner had the process been followed.

Similarly, insurers that automatically default to a tender process may miss synergies and negotiating advantages that could emerge as a consequence of existing relationships.

And, of course, there may be times in future when an insurer faces a challenge – either because of bad business, or tight deadlines, or a request for an unusual arrangement. At such times, having an established partnership may well pay dividends.

Segmentation and case-by-case assessment

Whilst the above buying behaviours are admittedly extreme, they serve to underline the need for thought to be given to the relationship that insurers desire to have with their existing and future potential reinsurers.

A conscious segmentation of the reinsurance players that operate in a market may be a good starting point. Determining classifications like "already a full partner", "potential to be a partner in certain areas" or "purely transactional" may help guide strategy when it comes to new reinsurance opportunities. Importantly, such exercises should also reveal that it is impractical, and indeed probably undesirable, to aspire for full partnership with all reinsurers in the market.

And even if a reinsurer is deemed to be transactional only, it may still be worth bringing them into partner-focused tenders, to allow an insurer to quantify the pricing gap, so that

the “price” of the partnership is at least acknowledged explicitly. Indeed, this pricing tension may be a good reason for offering a share to a transactional reinsurer.

As alluded to earlier, just as important as the segmentation is the definition of what an insurer expects from each segment, and that expectations are consistent with the behaviours that reinsurers actually display. If an insurer has limited knowledge of the wider reinsurance market, they may choose to work closely with a broker or experienced consultant to achieve this.

From a practical perspective, if relevant stakeholders have bought into the concept of segmentation, the results could be used on a case-by-case basis when a reinsurance solution is considered. More informed buying behaviours that may result from the segmentation exercise described above can include:

- Building new product propositions only with those that are already a full partner
- Alternatively, using such joint product development work to take a reinsurer with potential, to become a partner
- Tendering only to a selected panel of reinsurers (although watch out for unintended upward price bias by only including full-service reinsurers)
- Tendering widely, but distinguishing full partners by giving them a “last look” and thus prioritising them (beware of antagonizing the reinsurer that quoted lowest)
- Using brokers for transactions that predominantly depend on price, thus leveraging the breadth of the market instead of deepening relationships.

Conclusion

Relationships and partnerships represent the human side of reinsurance, which transcends metrics and vectors. No successful reinsurance program can ignore either of these two aspects, and indeed both should be explicitly covered by a comprehensive Reinsurance Framework.

8. Conclusion

Reinsurance is an important tool for maximising profit, managing volatility, optimising capital, and of course accessing services. More regulators around the world are requiring companies to have an explicit reinsurance strategy, for exactly these reasons.

As we've covered in this paper, the following key steps need to be taken into account to determine and implement an optimal reinsurance program:

- Determine what a company's overall needs are, both quantitative and qualitative
- Translate those needs into optimal reinsurance design (including defining "optimal")
- Create a complete Reinsurance Framework which include strategy, governance, guidelines, responsibilities, and more
- Implement the chosen framework by approaching the right parties, getting the best terms, and having a structure and treaty wording which achieves what was intended, as robustly as possible
- Manage the reinsurance program over time by reviewing actuarial performance, ensuring relevance to the current environment, etc.

That said, even with a well-designed and comprehensive Reinsurance Framework, the implementation comes down to humans interacting with humans.

Actuaries are also subject to cognitive bias, like having a preference to deal with parties where there is a strong relationship, a reluctance to negotiate, risk aversion, and more.

The purpose of this paper is to highlight the many areas where we believe companies may be able to improve both how they achieve their fundamental financial objectives, as well as how they implement such reinsurance programs. Without wanting to imply that reinsurance is broken, we have noted many examples where reinsurance was seen to be sub-optimal, and aspects that responsible parties should keep an eye out for in future.

Finally, focus must be placed on the dynamics and longevity of arrangements. We encourage firms to regularly challenge the potentially obsolete assumptions and criteria which underlie earlier reinsurance purchase decisions. While there may be some limits to what changes can be implemented in practice for in-force business, treaties can sometimes be terminated or closed to new business (subject to notice or lock-ins), and then improved for future reinsurance implementations.

Reinsurance is a powerful tool, but one which needs to be use efficiently and effectively. When done so, it will continue to demonstrate its capacity to deliver positive outcomes for all parties.

APPENDIX: References for Relevant Reinsurance Resources

1. Institute and Faculty of Actuaries (UK) resources

a. "Reinsurance should be a Tool, not a Habit" by the L&H Reinsurance Working Party (2015)

https://www.actuaries.org.uk/documents/b2-reinsurance-should-be-tool-not-habit

b. "Longevity Reinsurance Q&A" by Lockwood (2016)

https://www.actuaries.org.uk/documents/longevity-reinsurance-qa

c. "Longevity capacity: approaching the limit?" by Khan & Smith (2014)

https://www.actuaries.org.uk/documents/c8-longevity-capacity-approaching-limit

d. "A case study of a reinsurance-supported management buyout" by Brogden & Walton (2014)

https://www.actuaries.org.uk/documents/d7-case-study-reinsurance-supported-management-buyout

e. "Financial Reinsurance" by Walton & Lotti (2013)

https://www.actuaries.org.uk/documents/d03-financial-reinsurance-market-activity-regulatory-and-technical-aspects

f. "The Future of Financial Reinsurance" by Ketley (2012)

https://www.actuaries.org.uk/documents/d05-future-financial-reinsurance

g. "Making longevity reinsurance work" by Barone & McAleese (2012)

https://www.actuaries.org.uk/documents/g07-making-longevity-reinsurance-work

h. "Solvency II – will it radically change the purchasing of reinsurance?" by Daniels & Davies (2011)

https://www.actuaries.org.uk/documents/f07-solvency-ii-will-it-radically-change-purchasing-reinsurance

i. "Use and abuse of reinsurance under IFRS Phase II (handout)" by Brien & Shah (2008)

https://www.actuaries.org.uk/documents/use-and-abuse-reinsurance-under-ifrs-phase-ii-handout

j. "The financial impact of reinsurance under the Prudential Sourcebook (handout)" by Hillman & Davies (2003)

https://www.actuaries.org.uk/documents/financial-impact-reinsurance-under-prudential-sourcebook-handout

k. "Reinsurance Strategies under Solvency II" by Woodford & Chan (2013)

https://www.actuaries.org.uk/documents/f03-reinsurance-structuring-under-solvency-ii

l. "VaR vs Tail VaR Mindsets" by Kemp (2009)

http://www.nematrian.com/Docs/VarOpenForum20090325.pdf

m. "How to set risk appetite for an insurance company - a practical case study" by Hitchcox (2015)

https://www.actuaries.org.uk/documents/a2-how-set-risk-appetite-insurance-company-practical-case-study

n. "Reinsurance Structure and Shareholder Value" by Karim (2012)

https://www.actuaries.org.uk/system/files/documents/pdf/reinsurance-structure-and-shareholder-value.pdf

2. Books

a. "DictionRe: Reinsurance Dictionary, 2017" by Jenkins (2017)

https://www.amazon.com/DictionRe-Reinsurance-Dictionary-2017-Jenkins/dp/1520182988

b. "Life, Health & Annuity Reinsurance" by Tiller & Tiller (2005)

https://www.amazon.com/Health-Annuity-Reinsurance-Tiller-2005-01-01/dp/B019NRA1KE

3. Publications – general

a. “Special Report on Global Reinsurance” by AM Best (annual report so no single-year link provided)

b. “Introduction to Reinsurance - Bootcamp” by Society of Actuaries (2015)

c. “Essential Guide to Reinsurance” by Swiss Re (2010/2013)
https://www.swissre.com/Library/the-essential-guide-to-reinsurance.html

d. “Reinsurance (life & health, and fin re)” by Muiry (2001)
https://www.actuaries.org.uk/documents/b2-reinsurance-should-be-tool-not-habit

e. "Glossary of Reinsurance Terms" by RAA
https://www.reinsurance.org/Glossary_of_Reinsurance_Terms/

4. Publications - sub-topics

a. “Life (re)insurance under Solvency II” by SCOR (2012)
https://www.scor.com/en/file/15803/download?token=nTPZsylR

b. “Optimising life reinsurance strategy under risk-based capital measure” by Milliman (2013)
http://www.milliman.com/-/media/Milliman/importedfiles/uploadedFiles/insight/2014/optimisinglifereinsurancestrategysummarypdf.ashx

c. "Fundamentals of ILS" by Swiss Re (2011)
https://www.institutdesactuaires.com/global/gene/link.php?doc_id=871&fg=1

d. “Solvency II and Counterparty Default Risk” by Gen Re (2012)

e. “An Analysis of Reinsurance Optimisation in Life Insurance” by Veprauskaite & Sherris (2012)
https://web.actuaries.ie/sites/default/files/erm-resources/196_an_analysis_of_reinsurance_optimisation_in_life_insurance.pdf

f. “How to approach and utilize the world reinsurance market” by World Forum

g. “Credibility Theory” Record of the Society of Actuaries 1993, Vol.19 No.1B
https://www.soa.org/globalassets/assets/Library/proceedings/record-of-the-society-of-actuaries/1990-99/1993/january/RSA93V19N1B21.PDF

h. “IFRS17 Pocket Guide on reinsurance contracts” by IFRS Foundation (2018)
https://www.ifrs.org/content/dam/ifrs/supporting-implementation/ifrs-17/ifrs-17-pocket-guide-on-reinsurance-contracts-held.pdf

i. “Insurance Contracts: First Impressions” (section 17) by KPMG (2020 Edition)
https://home.kpmg/content/dam/kpmg/xx/pdf/2020/07/ifrs17-first-impressions-2020.pdf

j. “Optimizing Risk Retention” by Kaufold & Lennartz (SOA 2016)
https://www.soa.org/globalassets/assets/files/research/projects/research-2016-quantitative-retention.pdf

5. Regulation

a. The UK - "SS18/16: Solvency II longevity risk transfer", "SS20/16: Solvency II reinsurance counterparty credit risk", "PS33/16: Solvency II consolidation of Directors’ letters" by the PRA (2016)
https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/supervisory-statement/2016/ss1816
https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/supervisory-statement/2016/ss2016
https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/policy-statement/2016/ps3316

b. The EU - “Delegated Acts of Solvency II” by European Commission and EIOPA (2014)
https://www.ivass.it/pubblicazioni-e-statistiche/pubblicazioni/altre-pubblicazioni/2016/guida-solvency-ii/SolvencyII_Guide_EN.pdf?language_id=3

c. Chinese Insurance Regulations

https://www.cbirc.gov.cn/en/view/pages/ItemList.html?itemPId=973&itemId=981

d. Bermuda Insurance Regulations

https://www.bma.bm/document-centre/policy-and-guidance-insurance

e. Swiss Insurance Regulations

https://www.finma.ch/en/documentation/legal-basis/laws-and-ordinances/insurers/

f. American Insurance Regulations

https://www.crowell.com/files/Summary-of-United-States-Insurance-and-Reinsurance-Law.pdf

6. Reinsurance research groups

a. IFoA L&H Reinsurance Working party

https://www.actuaries.org.uk/practice-areas/life/research-working-parties/life-reinsurance

b. SOA: Reinsurance Section News
https://www.soa.org/sections/reinsurance/reinsurance-landing/

7. Conferences focused on L&H reinsurance

a. Refocus, USA

https://www.refocusconference.com

b. Reavie, France

http://www.reavie.com/

c. SIRC, Singapore (more non-life, but growing L&H component)

https://sirc.cvent.com

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