MILLIMAN RESEARCH REPORT

Reinsurance as a capital management tool for life insurers

Executive Summary

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Introduction

Life insurance companies face multiple risks that evolve over time and they must hold capital as a buffer against these risks. Capital management is an increasingly important topic for insurers as they look to find ways to manage their risks and the related capital requirements and to optimise their solvency balance sheets. Given the traditionally long-term nature of the insurer's liabilities, effective capital management can be complex. Insurers may face capital pressure due to their solvency coverage levels, shareholder demands, regulatory concerns etc. Capital pressures have increased for many firms in recent years due to the continuing downward trend of interest rates to historic lows.

Reinsurance is one of the key capital management tools available to insurers. Several reinsurance structures are available, each with its own advantages and disadvantages and requiring experience and expertise to make optimal decisions. We have therefore prepared this research paper exploring a range of reinsurance strategies that could be utilised by life insurers for capital management purposes. We investigate more common reinsurance strategies, along with new developments and innovative strategies that could be implemented by life companies.

We have used our own experience and expertise across Milliman, as well as holding discussions with a range of reinsurers, in order to determine the strategies to include and the considerations to focus on. We would like to thank these companies for their participation in our study.

We have written this paper from a life insurer's perspective.

Purpose of executive summary paper

The full research paper is quite detailed. As such, we have prepared this executive summary version to note some of the key highlights of the research and to act as a guide to the full paper. Each chapter of the full paper has been designed to be reasonably self-contained, for the benefit of readers of this executive summary paper who wish to look at further detail on particular sections only. The full paper is available here.

Reinsurance under Solvency II

Reinsurance strategies considered in this research are generally limited to strategies that effectively transfer risk. Current solvency capital frameworks such as Solvency II do not typically allow for transactions that would materially lower capital requirements whilst transferring only a minimal amount of risk to the reinsurer.

We have given most of our focus in this paper to strategies of relevance within Europe and, therefore, that are subject to Solvency II capital considerations. Many other jurisdictions are subject to a similar risk-based capital regimes. Conclusions that hold for life insurers subject to Solvency II are therefore also broadly useful for insurers in other jurisdictions with risk-based capital regimes.

The Solvency Capital Requirement (SCR), and hence also the risk margin, is calculated net of reinsurance arrangements but including counterparty default risk allowance. The allowance for reinsurance in the SCR is subject to meeting various requirements in Solvency II, particularly for companies using the Standard Formula (SF). They include requirements around the jurisdiction and creditworthiness of the reinsurer, the duration of the cover and replacement arrangements, monitoring of risks related to the cover and transaction documentation.

Although reinsurance can be used to mitigate risk, it also introduces new risks, the main ones being basis risk and counterparty default risk. For a reinsurance cover to be an effective capital management tool, these risks would ideally be kept to a minimum.

- Regulators have put increased emphasis on basis risk in their approval processes for reinsurance arrangements. If there is material basis risk, a reinsurance arrangement should not be reflected in the SCR calculation, according to the European Insurance and Occupational Pensions Authority (EIOPA).
- Counterparty default risk can reduce the effectiveness of the reinsurance cover in the calculation of the SCR and own funds (through the risk margin). Less risk may be transferred from the insurer's balance sheet overall, leading to a smaller capital requirement reduction than expected. Counterparty default risk can be partially offset by collateral arrangements and guarantees. The capital to be held for counterparty default risk is also dependent on the credit rating of the reinsurer and the capital regime it is subject to.

Because we focus on capital management, we describe the effectiveness of reinsurance strategies in the paper on the basis of Solvency II-related measures. In practice, however, various other measures are also important, such as the impact on the profit and loss (P&L) statement of an insurer. In the paper we therefore also give a brief overview of International Financial Reporting Standard (IFRS) 17 regulations in relation to reinsurance held. We have particularly considered potential accounting mismatches between the treatment of reinsurance and insurance contracts under IFRS 17, of which there are many.

Assessing reinsurance for capital management

Decision process for reinsurance implementation

It is important to realise that every capital management action comes with its trade-offs. Before deciding on which one to implement, it is important to decide:

1. What Key Performance Indicators (KPIs) and Key Risk Indicators (KRIs) the company wants to improve using the reinsurance strategy. Examples of KPIs are return on capital, stable dividend payments, new business growth and operating profit. Examples of KRIs are the solvency coverage ratio, liquidity of the portfolio, credit exposures and capital requirements.
2. What the trade-offs of the strategy are, and whether they are acceptable.
3. How these trade-offs evolve during the run-off period of the insurer's portfolio.
4. When to implement the capital management action.

Based on the answers to these questions the board of an insurer can decide on which reinsurance cover and strategy to implement.

Evaluating reinsurance strategies

When deciding on which reinsurance strategy to implement, the abovementioned key areas of consideration can be broken down further into the following key considerations:

Capital requirement considerations

1. **Impact on required capital:** An effective reinsurance cover transfers risk from the insurer's balance sheet, generally lowering the capital requirement for the risk transferred.
2. **Additional risk introduced:** Additional risks might be introduced by the reinsurance cover requiring the insurer to hold capital against them. Examples are (i) counterparty default risk, (ii) expense risk due to a changing expense basis and (iii) a loss in diversification benefits.
3. **Renewals required:** In cases where reinsurance covers are short-term (e.g., five years) there can be a duration mismatch compared to the liabilities. This requires the cover to be rolled forward at maturity. Replacements can impose additional risks due to, for instance, the absence of liquidity in the market or increased reinsurance costs.

P&L considerations

4. **Cost of reinsurance:** Implementing a reinsurance cover leads to several additional costs, including reinsurance premiums, collateral costs, administration costs and additional regulatory reporting.
5. **Capital generation:** The insurer's capital generation is impacted through both the required capital and own funds. Generally, the reinsurance cover leads to an increase in solvency coverage ratio, unlocking capital that can be used to further improve the capital generation, for instance by re-risking the asset portfolio, improving the return on equity. Furthermore, the transfer of risk can lead to a release in risk margin, increasing the own funds further.

   On the other hand, the reinsurance cover might be ceding away profitable business. Additional costs introduced by the cover decrease the profitability even further. This is exacerbated in the case where assets are involved in the risk transfer, as it leads to a lower overall return on assets. This can be partially offset when the cover is on a 'deposit back' basis.
6. **P&L volatility:** Transferring risk potentially reduces the overall volatility on the insurer's P&L. This volatility might reduce further where the risk margin decreases, lowering the interest rate sensitivity on the insurer's balance sheet.

7. **Timing and amount of dividends:** An insurer is usually only allowed to pay out dividends where the solvency coverage ratio exceeds a certain threshold. Increasing the solvency coverage ratio therefore enables the insurer to pay out dividends earlier, increasing the value of the company.

   In cases where the reinsurance cover leads to a decrease in capital generation over time, the total amount of dividends paid decreases. As such, there is a trade-off between timing and the amount of dividends to be considered when implementing a reinsurance strategy.

Implementation and approval of the reinsurance cover

8. **Time required to implement the arrangement:** The due diligence phase of a reinsurance agreement can be a lengthy process. Extensive portfolio analysis is required, policy and claims administration might need to be changed and regulatory approval may be needed.
9. **Flexibility of the arrangement:** Reinsurance covers can span many years, even decades, and due to the evolving nature of an insurer's business a reinsurance deal might become suboptimal in the long run. Optionality to change or dissolve the reinsurance contract could therefore be considered.
10. **Availability:** For a strategy to be effective it is important that there is sufficient liquidity in the market for the insurer's risk to be transferred, that there are enough reinsurers available in the market willing to take on this risk and that the solutions offered guarantee an effective risk transfer.
11. **Regulatory approval (see below).**

Regulatory considerations

Demonstrating that the reinsurance deal is genuinely used as a risk-mitigating technique as part of the firm's overall risk strategy is key for regulatory approval. Engaging with regulators early in the process is important especially when considering reinsurance contracts that are highly bespoke in nature.

Demonstrating enhanced policyholder protection is also paramount for most regulators. The main criteria for regulatory acceptance of reinsurance transactions are:

- A clear business rationale for implementing the reinsurance deal.
- A strong understanding of the risks that are being transferred, the risks that remain and any new risks that emerge as part of the transfer, particularly counterparty risk. There is not necessarily a need to have reinsured every component of the risk but a clear understanding of what is and is not transferred is imperative.
- A low level of basis risk and a clear understanding of this basis risk.
- Clear analysis and consideration of different possible outcomes, including scenarios where the reinsurance may not be effective.
- A financially strong (and preferably large) counterparty and stringent security of the arrangement, particularly using collateral or other risk-mitigating measures. The reinsurer's jurisdiction may also be relevant to the regulator.
- Regulators are sometimes keen to see that assets transferred as part of a reinsurance transaction are held in local custodian accounts. This is very relevant for insurers that are considering entering into reinsurance deals with reinsurers that operate outside of their jurisdictions.
- Recapture plans in case of reinsurer financial distress or default.

The above criteria are all things that are important to most insurers as part of their internal governance and risk management in any case. Early engagement with regulators is often the best way to achieve a positive outcome in terms of getting regulatory buy-in for a material new reinsurance arrangement.

Collateral

Many reinsurance transactions are collateral-backed to mitigate against counterparty default risk of the reinsurer. The amounts of collateral required to back the reinsurance transactions will depend on the type of reinsurance and the reinsurer's creditworthiness.

The quality of collateral is a very important component of a reinsurance arrangement and is sometimes the most critical part, particularly for asset-intensive reinsurance. Therefore, collateral typically requires significant focus as part of the treaty negotiations. It is important to set strict limits and investment guidelines on the collateral account when financial investments are involved. It is also important for an insurer to understand how any remaining uncollateralised exposure can move over time and under different possible scenarios.

There are also various requirements in the Solvency II regulation to be met in order for collateral arrangements to be recognised in the SCR calculation. Some of the key ones are: that the insurer should have access to the collateral assets in a timely manner in the event of default; that the collateral should provide protection by being of sufficient credit quality and stable in value; and that the value of the collateral should not be materially dependent on the credit quality of the counterparty.

Overview of reinsurance types in the market

Capital requirements for market risk and life underwriting risk make up the vast majority of the reported Solvency II capital requirements for European life insurers. The main life underwriting risks are longevity risk, mortality risk, catastrophe risk and lapse risk. Reinsurance can be used to mitigate each of these risks.

Some common reinsurance structures such as quota-share, surplus and excess-of-loss reinsurance can be used for many different risks. In the sections below we cover the main reinsurance options for the risks at a high level. These options are covered in much more detail in the full paper.

It is important to realise that, in practice, reinsurers often compete on different deal structures as some work better than others for different reinsurers. Insurers can shop around for a solution that best meets their particular needs.

Longevity risk reinsurance

Figure 1: Overview of Reinsurance and Capital Market Solutions That Can Be Used to Transfer Longevity Risk and Some Characteristics (a more complete overview of these and other reinsurance arrangements is included in the full paper)

Risk transfer	Indemnity-based longevity swap	Index-based longevity swap	Longevity bonds	Quota-share cover
Risks covered	Longevity	Longevity	Longevity	Longevity & asset risks
Basis risk	No	Yes	Yes	No
Collateral placed	High	High	High	Low
Counterparty default risk	Low	Low	Low	High
Suited for small portfolios?	No	Yes	No	Yes
Duration of cover lower than liabilities?	Potentially	Yes	Yes	No

Mortality and catastrophe risk reinsurance

Figure 2: Overview of Reinsurance and Capital Market Solutions That Can Be Used to Transfer Mortality and Catastrophe Risk and Some Characteristics (a more complete overview of these and other reinsurance arrangements is included in the full paper)

Risk transfer	Quota-share cover	Excess of loss cover	Mortality swaps & bonds
Risks covered	Mortality, Catastrophe & market risks	Mortality & Catastrophe	Mortality & Catastrophe
Basis risk	No	No	Yes
Collateral placed	Low	Low	High
Counterparty default risk	High	High	Low
Suited for small portfolios?	Yes	Yes	No
Duration of cover lower than liabilities?	No	Yes	Yes

Lapse risk reinsurance

Figure 3: Overview of Characteristics of Lapse Risk Reinsurance Solutions (a more complete overview of these and other reinsurance arrangements is included in the full paper)

Risk transfer	Mass lapse	Lapse up/down
Risks covered	Mass lapse	Lapse up/down
Basis risk	Yes	Yes
Collateral placed	Low	Low
Counterparty default risk	Low	Low
Suited for small portfolios?	No	Yes
Duration of cover lower than liabilities?	Yes	Potentially

Financial risk reinsurance

The most common way to manage financial risks in the insurance industry is by using derivatives. Reinsurance solutions, however, also be used for these purposes. Although a reinsurance solution typically lowers capital requirements, it can materially impact other financial measures such as accounting income. Nevertheless, insurers are exploring possible new reinsurance solutions to have in their financial management arsenals.

There are many different ways to structure such an arrangement. One example we discuss in the paper is asset-intensive reinsurance or full risk reinsurance. This type of reinsurance is usually applied on in-force blocks of long-dated liabilities, typically with guarantees and heavily weighted on asset and interest rate risk.

Asset intensive risk reinsurance covers typically deal with all risks, and the investment risk would be just one aspect of it. Because all risks are transferred to the reinsurer, it is basically a form of full coinsurance. The reinsurer pays all future claims and benefits of the reinsured portfolio. Assets are managed by the reinsurer as well but are held in such a way that they are protected from the reinsurer's default.

Full risk reinsurance can be used to unlock value in the business, de-risk the balance sheet, remove low return business to improve the insurer's overall returns and improve profitability of new business through extra yield on investments.

Other types of reinsurance

There are a wide range of other possible arrangements that could help mitigate insurers' capital requirements. While there have been relatively few implementations, each of the items below has been explored by a number of companies and could potentially hold some promise in certain situations:

- Value of in-force (VIF) monetisation due to contract boundaries
- Investment margin financing
- Contingent reinsurance
- Reinsuring emerging risks, such as cyber risk
- Operational risk reinsurance

These other types of reinsurance are described in more detail in the paper.

Capital management strategies using reinsurance

In this chapter we discuss various reinsurance strategies and their potential uses for life insurance companies. For the more common reinsurance strategies we show potential impacts on the financial measures of a fictional insurance company, which has a typical range of life insurance underwriting risks on its books.

Because we focus on capital management, we describe the effectiveness of reinsurance strategies in the paper on the basis of Solvency II-related measures. In practice, however, various other measures are also used, such as IFRS operating profit. When assessing a reinsurance cover or strategy, all these measures should be considered.

The fictional insurer has been constructed to include some other features of a typical life insurer and has two main objectives:

- Optimise future dividend payments and timing to maximise the insurer's shareholder value
- Maintain its current market share by writing sufficient new business volumes

In the paper, we have shown how a number of strategies could be implemented by the fictional insurer and how those strategies would impact the company in both the short and long term. These strategies include the following:

0. Base scenario without reinsurance.
1. Reduce new business strain by transferring underwriting risk: This results in more dividend-paying capacity in the medium term but less capital generation in the long term (unless higher levels of business were to be written with the higher levels of available capital rather than increasing early dividends).
2. Reduce capital requirements and new business strain by transferring underwriting risk: Similar to impacts of 1 but on a greater scale because existing business is included in the deal.
3. Reduce capital requirements only by transferring underwriting risk: Similar to impacts of 2 but on a smaller scale because new business is excluded from the reinsurance deal.
4. Reduce volatility of risk margin: Essentially the insurer enters into a capital relief trade or the insurer might seek direct relief for the risk margin, for example by securitisation of the release of future margins as the risk margin unwinds, or by a contingent reinsurance of the underwriting risk driving the risk margin.
5. Release risk margin by transferring underwriting risks: Transferring underwriting risk based on its attribution to the risk margin rather than the SCR at outset is another way to further optimise the insurer's balance sheet.
6. Smoothing profits, capital and coverage ratio: Contingent capital can be used to smooth profit, capital and the coverage ratio of an insurer. This is important because stability of financial statement profits is generally viewed as a positive by most companies.
7. 'Just-in-time' capital: For instance, a quota-share treaty could be implemented where only a small portion of the liabilities is ceded to the reinsurer, but the reinsurer commits to a certain level of future capacity (for adverse times) in exchange for a facility fee.
8. M&A deals: As an interim solution for reflecting the economic impact of a mergers and acquisitions (M&A) transaction agreed with another party.
9. Management of run-off portfolios: Run-off portfolios can release capital and save on administration costs, which the insurer can instead redeploy to its core business.

Conclusion

There are several ways reinsurance can be used as a capital management tool. In practice, its efficiency is dependent on a lot of factors. When implementing a reinsurance arrangement, several choices therefore need to be made and it can be a complex puzzle to solve. It is important for the management of the insurer to have considered the factors outlined earlier in the paper before deciding which capital management strategy to implement.

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