

Securitisation of Non-Life Insurance Working Party

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1. INTRODUCTION

This particular paper looks at ways in which non-life insurers have and might consider securitising risks beyond the traditional catastrophe bond area that is currently the dominant share of this market. This is a very wide area, capturing the entire spectrum of assets and liabilities of insurers, both those on and off the balance sheet.

There are a variety of reasons why non-life insurers might wish to enter into insurance linked securitisations. The working party found it helpful to revisit these when working out what new areas for non-life insurance linked securitisations exist. Foremost amongst these are to provide capital relief to peak risk exposures, to crystallise the value of future revenue streams and to provide an additional source of capital. The particular reason that an insurer wishes to enter such a transaction will affect the design used and the particular features involved. We look at these further in Section 2.

Non-life insurance linked securities typically fall into the two camps of asset and liability securitisations. We outline some of the structural and other features of each and highlight their differences in Section 3.

We consider the main potential areas for securitisation in Section 4: reserves; reinsurance assets; underwriting risk; goodwill; intangibles.

The feasibility and desirability of non-catastrophe securitisations, especially as compared to more conventional alternatives to equity capital, are strictly linked to their treatment and recognition by regulators and rating agencies. We discuss some of the issues involved in section 5.

The very wide range of possible assets and liabilities that could be securitised, together with the immaturity of this market means that there are a significant number of practical challenges to be faced and overcome in achieving the desired outcome. We try to identify some of the potential pitfalls and challenges in section 6, but anticipate that the reader will spot many others, and further challenges and their solutions will emerge over the years to come.

The opening up of the market for non-life insurance linked securities beyond the traditional catastrophe bond arena, presents some new and exciting opportunities for the profession. We discuss these further in section 7.

Finally, in section 8 we summarise our main findings.

This paper is one of a series of stand-alone but complementary papers produced by the GIRO 2008 Securitisation of Non-Life Insurance Working Party.

The other papers cover:

- a **History of Securitisation** to date including a review of predictions made in prior GIRO papers,
- a quantitative and qualitative review of the **Zero-Beta** quality often claimed for catastrophe bonds,
- a review of the important topic of **Basis Risk** within non-life insurance linked securitisations including an example spreadsheet,
- a review of the **Lessons from Sub-Prime** and wider credit crunch for non-life insurance linked securitisation and more widely for non-life insurers,
- a review of **Regulatory Regimes** (particularly capital regime) treatment of non-life insurance linked securitisation.

2. REASONS FOR INSURANCE LINKED SECURITISATION

This section sets out a number of motivations for insurers and investors being interested in non-life insurance linked securitisations which we believe might cause their wider use in future outside the established area of catastrophe bonds. We then turn to a more detailed discussion of specific reasons why insurers might consider a securitisation.

2.1. Motivations for wider use of securitisation

There are a number of benefits for issuing insurer and for investors in a wider use of securitisation in non-life insurance. For the issuing insurer these could include:

- effective finality
- 100% collateralised protection,
- retained upside via equity participation in the structure,
- explicit recognition of investment income (i.e. closer to the economic view than is typically allowed by rating agency / regulatory capital regimes which might only allow 50% of discount for capital calculation purposes)
- a more precise view of reserve risk – potentially leading to a lower capital requirement

For the investor these include:

- new perils in the insurance-linked class – more diversification;
- a move away from the binary outcome associated with catastrophe bond (sometimes referred to as the “credit cliff”)
- alternative tenor compared to catastrophe bonds 1-3 yrs, and life securities 8-15 years

2.2. General reasons for securitisations

From a general point of view, securitisation transforms financial relations into market transactions. The standard form that asset securitisation takes is by the identification and packaging by an entity of its interests in a set of identifiable cashflows over time, which are then ceded to investors, usually accompanied by further collateralisation or credit enhancements.

The reasons why this may be desirable include, among others:

- monetization of illiquid assets,
- pooling and restructuring of multiple, small and illiquid cashflows into synthetic marketable instruments,
- cheaper financing, through creation of debt tranches with more desirable risk-return profiles,
- improvement of asset quality for regulatory purposes,
- hedging (against credit risk, or variability of future cashflows) and returns smoothing,

- access to quasi-equity capital, on a contingent basis,
- growth financing,
- acting as an alternative to sale of specific lines of business,
- acting as a form of acquisition financing

2.3. Non-life insurance reasons for securitisation

From the specific point of view of a non-life insurance company, we identified three principal reasons for insurance linked securitisation:

- to provide capital relief to peak risk exposures,
- to crystallise the value of future revenue streams
- to provide an additional source of capital.

These are in addition to what might be considered to be shorter-term or tactical opportunities (even though the chance to take advantage may exist for an extended period), such as market pricing or tax position differences.

Peak risk exposures

Peak risk exposures provide significant capital strain for insurers, and aside from the largest, are often an inefficient use of capital. Securitisation provides an alternative to traditional reinsurance here.

It is easy to see why catastrophe exposures have been the dominant area for securitisation here, being the primary gross risk for many insurers and therefore being most capital intensive, while also benefiting from having a relatively simple structure, a short-term period of uncertainty and a relatively low reliance on after the fact judgements.

The risks that follow catastrophe exposures in order of importance will vary from insurer to insurer but typically will arise from: reserve risk, particularly for long-tailed liabilities or economic exposures; underwriting risk; credit risk from reinsurers, brokers and other counterparties; liquidity risk; market risk; operational risk; and group risk.

The last four of these are likely to have simpler solutions (e.g.: overdrafts for liquidity, investment instruments for market risk) or do not appear to lend themselves to risk mitigation of a capital markets nature (in the case of operational or group risk).

An interesting factor here is the impact of the regulatory environment on the time-frame over which risks are considered. This is particularly important for insurers carrying both long-tailed liability risks, where over a Solvency II style one-year time horizon the risks can be considerably lower than over a longer time-frame.

A spin off benefit from carrying out this sort of securitisation is that it enables management to “price” or “mark-to-market” the risks that they are carrying. This is helpful both from an internal risk management and challenge perspective and as an accounting tool, particularly with the trend towards fair-value accounting. It is worth providing a note of caution at this point, as the uncertainties surrounding the pricing and the lack of deep, liquid markets are likely to mean that such pricing models may

prove unreliable, particularly when the company or insurance market comes under stress (for example many financial market participants have criticised the impact of mark-to-market accounting in the aftermath of the credit crunch).

The multi-year tenor of the bonds issued can provide an attraction over traditional reinsurance, by ensuring continuity of capital supply following a major market loss event. This could be particularly important for classes that are not affected by a major catastrophe loss, but nevertheless find reinsurance capacity reduced and existing pricing or capital models disrupted as a consequence.

Crystallisation of future income streams

There are two main sources of future income streams for insurers: balance sheet debtors (particularly reinsurers and brokers) and renewals.

Balance sheet debtors appear highly suitable for securitisation, provided that their term is sufficiently long for the process to be worthwhile. In practice this may mean that instalment premiums and brokers balances are not viable, however reinsurance recoveries for liability classes could be suitable.

The value of renewal rights arises most in those classes of business where there are high retention rates and significant stability in the portfolio. For more volatile classes, different forces at work, such as impairment or insolvency risk, may make the design factors more complex.

Additional sources of capital

Securitisation can be seen as a means of raising capital that provides an alternative to equity and other acceptable types of tier 2 capital such as subordinated debt. Here goodwill aspects of an insurer's value, such as renewal rights, brand values and other intangible assets of the business can be mortgaged to raise additional cash funds for the insurer.

3 SECURITISATION MECHANISMS

Asset and liability securitisations

Securitisations fall into two broad camps: liability (or “risk”) and asset (or “value”) securitisations. Typically peak risk exposure mitigation will be of the risk variety while the other two motivations for securitisation described in Section 2 lead themselves to value securitisation solutions.

Broadly, value securitisations result in an immediate positive cashflow to the insurer in return for its sacrificing a future revenue stream; while risk securitisations give rise to an opposite profit signature. This difference has a material impact on the economic structure of the securitisation, in that the cashflows operate in the opposite direction and therefore the protection that the capital market investors require differs.

3.1. Risk securitisation structure

A SPRe (“Special Purpose Reinsurance Company”) is established to enter into a reinsurance agreement accepting the risk from the insurance company over a specified term. At the same time, the SPRe issues notes of (roughly) the same term to collateralise the reinsurance agreement. If the risk factor during the term lies below the trigger level, then the notes will be repaid to investors. If the risk factor develops above the trigger level then the principal repaid to investors is reduced to allow for the obligations under the reinsurance agreement to be met.

The amount of principal reduction would normally be in proportion to the amount of the risk factor in excess of the trigger level and up to an agreed exhaustion point. The exhaustion point of the reinsurance will usually coincide with the amount of notes issued, with some small difference for ongoing expenses.

To compensate investors for the risk of losing their principal, they receive a spread over the risk-free rate of interest. The risk free-rate is normally based on LIBOR or EURIBOR. Since the collateral assets are held in high quality risk-free assets (often with the benefit of a total return swap), the risk-free portion of the note coupon is funded by the return on these assets. The spread for investors and any ongoing expenses are effectively funded through the payment of reinsurance premium. The arrangement is illustrated in Figure 1. The cash flows indicated with a dashed line in the Figure 1 are contingent upon the development of the liability over the term of the bond.

An important aspect is that the liabilities being securitised, and the assets backing them, remain on the balance sheet of the company. For insurance liabilities this means that the primary relationship between the insurer and the policyholder is unbroken. This is distinct from mortgage finance where mortgages are sold to the Special Purpose Vehicle (“SPV”) changing the legal relationship between the originating company and the mortgagee. In the case of mortgages this creates no regulatory problems because all of the obligations are from the mortgagee to the SPV. Clearly, in an insurance context it is the other way round and so maintaining the relationship with the authorised insurer is fundamentally important, hence the use of the intermediate reinsurance arrangement.

Whilst the liabilities and the supporting assets remain on balance sheet the risk of adverse development of the risk factor, above a threshold and subject to a defined limit, is transferred to the investors through the structure. So the benefit to the balance sheet is through the reduction of in the insurer's capital requirement as a result of the risk transfer.

Another way to think of this is as a capital substitution. The note-holders principal, because it is subordinated to the interest of the insurer under the reinsurance agreement, is effectively a new source of risk-bearing capital. The value or pricing decision is then: how much capital does it replace? The rate of capital substitution is likely to be significantly less than one-for-one (i.e. one pound of note-holder's principal substituting one pound of capital requirement or economic capital). This is because the insurer capital requirement is likely to depend upon the reserve risk taken in the wider context of its overall portfolio of risks whereas for the note-holder, the available pool of risks for diversification is much wider.

The SPRe is likely to be a regulated entity so a holding company structure is used to issue debt and downstream it to the SPRe operating company as equity. The SPRe then retains the equity in a trust account as collateral for the reinsurance. If the reinsurance trigger occurs then the collateral is diverted by the trustee to meet the reinsurance policy obligations.

Regulation of the SPRe is likely to be straightforward since the maximum obligation under the reinsurance agreement is usually fully collateralised, i.e. the reinsurance policy limit is sized to the level of the note issuance. Interest generated from the collateral, plus the net proceeds of the total return swap are combined with reinsurance premium net of expenses and remitted to the holding company as dividends. The dividends are used to meet coupon payments to note-holders. Any excess is payable to insurer via its equity participation in the holding company. In some cases it may be necessary to use a genuine third party reinsurer rather than a special purpose reinsurer to gain the appropriate accounting benefit.

In circumstances where a loss is payable under the reinsurance then the interest on any remaining collateral and the excess of future premium under the reinsurance are trapped within the trust account for the benefit of the insurer. Therefore, both principal and interest are at risk for investors. This is one possible structure. Other structures are possible which put only the principal at risk.

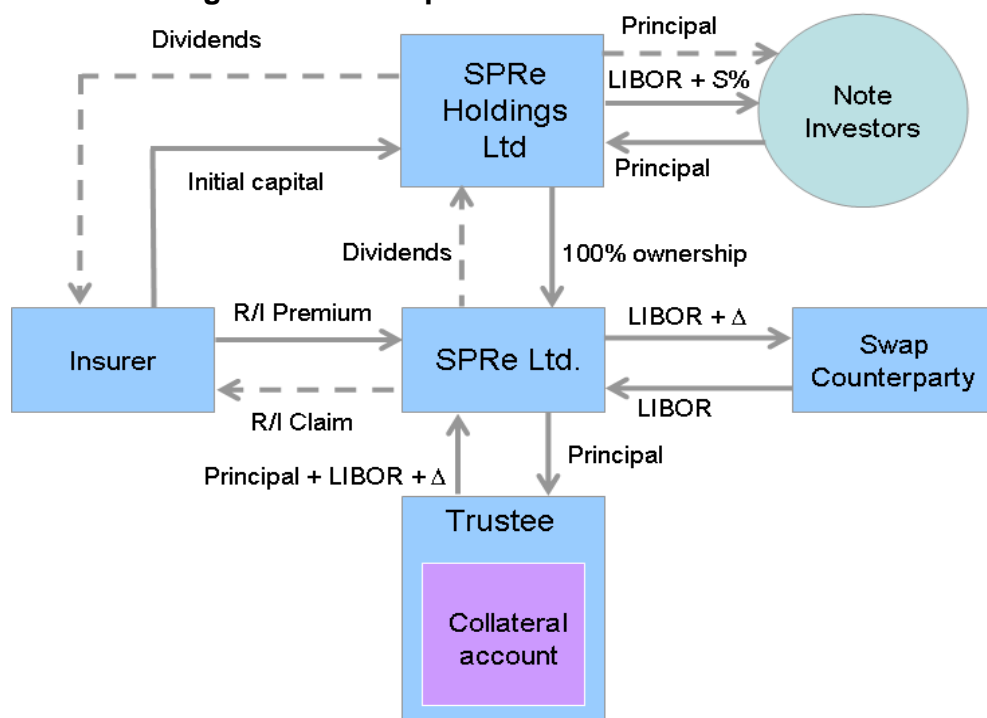
Structural aspects

Careful consideration needs to be given to structuring of the transaction to create the right type of risk transfer desired by the insurer. Structuring encompasses the legal structure and the arrangement of entities to effect the arrangement between insurer and investors. It tends to break down into a number of main components:

- Reinsurance agreement;
- Note-holders agreement;
- Total returns swap agreement;
- Trustee agreement; and
- Dividend policies for SPRe and SPRe Holdings Ltd.

Further discussion of structural aspects are considered in section 4 under the various securitisations considered.

Figure 1 – Example Risk Securitisation Structure



3.2. Value securitisation structure

In Figure 2 we set out an example of a value securitisation structure in a similar form to the risk structure in Figure 1.

Under a value securitisation, capital raised from investors is paid to the insurer in return for the rights to a future, uncertain cashflow stream such as reinsurance recoverables or renewal premium income.

This future income stream is paid from the insurer to the SPV in the form of reinsurance premiums. These are then transformed by means of swaps and an appropriate holding company structure for the SPV into interest payments to investors.

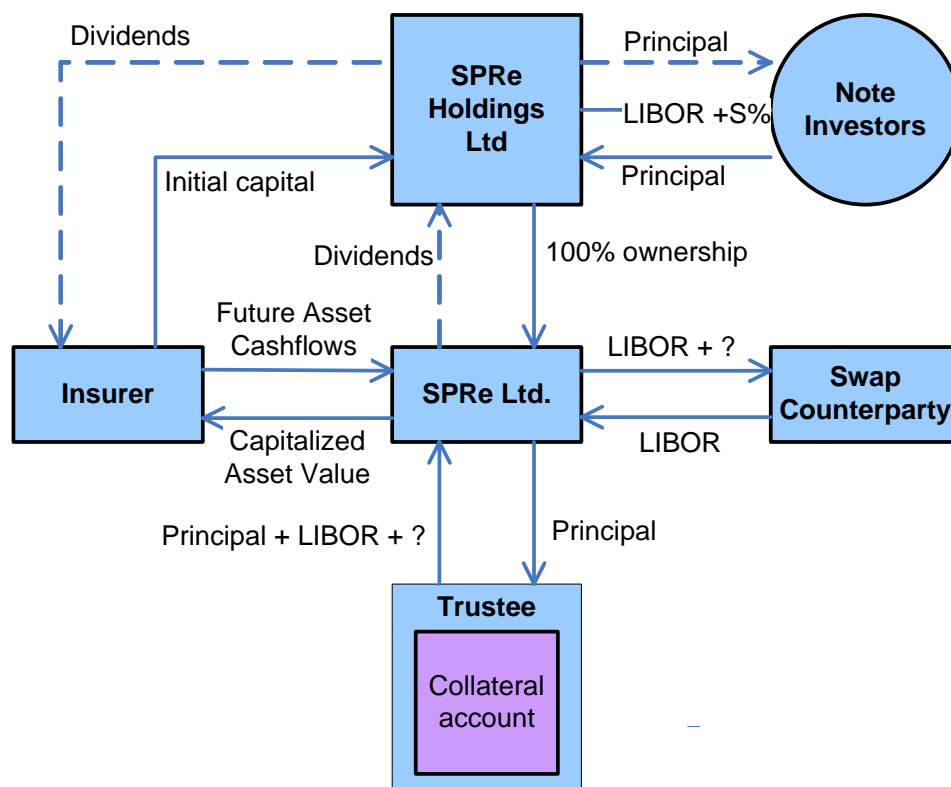
Unlike for mortgage securitisations, it may not be possible, or desirable, to transfer the asset to the SPV. This is because of the generally short-term nature of the underlying transactions and the value in the ongoing relationship between the insurer and the underlying counterparty (here policyholder or reinsurer).

Structural aspects

If there is no principal component to the bond, the requirement shown in Figure 2 for a trustee falls away.

Similar legal issues in structuring an asset securitisation arise as for a risk securitisation. Further, commercial aspects of the structure, in particular to protect investors from adverse selection behaviour by the insurer, need to be taken into account. These are discussed further in some of the specific commentary contained in section 4.

Figure 2 – Example Asset Securitisation Structure



4 SPECIFIC TYPES OF NON-CATASTROPHE LINKED SECURITISATION

4.1 Reserves

Reserve securitisation is an example of a liability securitisation. Under it, the reinsurance agreement could work along the lines of an adverse development cover (“ADC”) or a loss portfolio transfer (“LPT”).

In the case of an ADC, the risk transferred is essentially that around the uncertainty in the ultimate losses of the cedant for a defined block of business. This risk essentially relates to the frequency and severity of claims up to settlement. The frequency component is likely to be of relatively small significance depending on the years of reserves being securitised and the classes of business. There is frequency risk to the extent that late notifications are admitted under the reinsurance and add to the ultimate claim cost. It is clearly possible, to structure the deal in such a way that late notifications are excluded, although the breadth of risk transfer for the insurer is reduced. The severity risk relates mainly to the risk adverse development on known claims (IBNER risk).

An LPT type arrangement would also bear the timing risk of claims development.

Because reserve risk is non-binary in nature i.e. reserve deterioration can be partial compared to the total limits offered, it would be possible to tranche the obligations of the SPRe Holdings company so that different investors bear different portions of the reserving risk. The classification of notes in this way based on a priority of payments creates layers of risk (similar to the layering of a traditional reinsurance programme) where investors can be exposed to successively more risk-remote levels of risk. This slicing up of the risk into layers has proved highly effective in attracting investors in other securitisation markets with different tranches appealing to different bands of investors.

There are a number of complexities associated with a reserve risk securitisation:

- Matching of the cash flows between the payment of reinsurance premium, investment income on the collateral, the obligations to pay coupons to investors and the actual reserve payments under the original claims
- Will bond payments be based on actual claims paid or on an actuarial evaluation of ultimate claims liability at the end of the bond tenor?
- Accounting and capital treatment. The likely move under IFRS and Solvency to a form of best estimate discounted reserves with a risk margin will change the landscape for traditional ADC/LPT (and therefore for securitisation alternatives) which have often been based around a form of regulatory arbitrage by allowing implicit discounting of reserves. Can the securitisation be structured in a way to allow the issuer to mark the contract to adverse development reported after the contract starts e.g. as an option with a strike price set at the trigger level? As adverse development materialises the value of the option would be expected to appreciate reflecting the increased option value. Once losses exceed the trigger level then the option would take on intrinsic value in addition to its option value. Eventually, as adverse development exceeds the reinsurance limit, the option would have only

intrinsic value and no option value. This is in contrast the normal insurance accounting treatment for stop loss reinsurance where option value is not considered but only the recoveries anticipated under the best estimate reserves.

- Adverse selection - how do the capital markets protect against adverse selection with only the most toxic risks securitised?
- Moral hazard - how do capital markets control claims handling, timing of reserve recognition and payments?

As well as covering reserve risk for on-going and relatively short tailed classes of business, securitisations might provide innovative solutions to longer term run-offs which could be particularly useful where there exist problems with alternatives (e.g. Part VII transfer or schemes of arrangements, standard sale or reinsurance.)

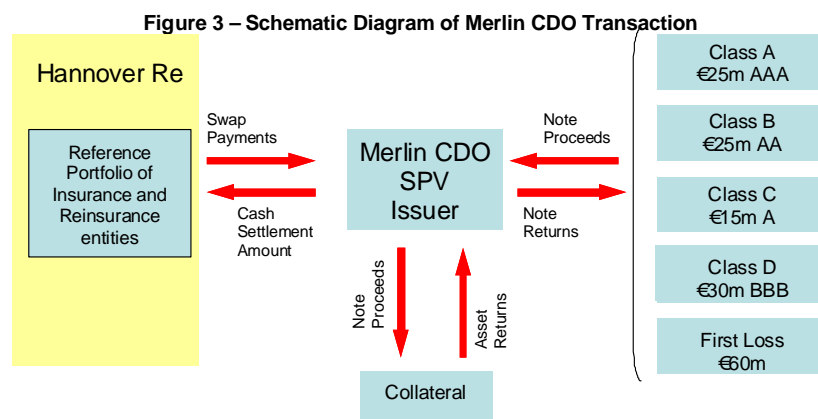
However there are additional complexities with setting up the structure if there is a very long tail run-off e.g. is it plausible to assume that bonds with 20+ years term will be acceptable to investors? Will the risk premium that sponsors are prepared to pay be attractive to investors when spread as a margin over LIBOR over a 20 year period? Will the collateral be invested in cash or near-cash (as in most catastrophe bonds) tying up liquid assets in an illiquid bond or in a wider variety of assets including equities (more analogous to the approach used by offshore reinsurers writing conventional LPTs) therefore losing the zero-beta feature of catastrophe bonds

Can some form of parametric or double triggers be developed where sufficient market/aggregate data exists? For example it might be possible to achieve a securitisation of UK asbestos liabilities based on annual mesothelioma deaths trigger, and/or industry losses

4.2 Reinsurance assets

One risk that an insurer may have is credit risk on their reinsurance assets. This risk can be mitigated by using securitisation techniques as has been demonstrated by the Hannover Re in 2007 through their Merlin transaction.

This transaction transferred a proportion of their counterparty credit risk on its reinsurance assets through a Credit Default Swap to a SPV. The SPV support its potential obligations by issuing notes to the capital markets as shown in the figure 3.



The main benefits of this sort of transaction for the insurer are:

- It is easy to transact, with little underlying data analysis required. The synthetic nature of the structure means the reference portfolio does not need to exactly replicate the insurer's own exposure.
- It is flexible, as the reference portfolio can be amended to fit in with reinsurance programme as it changes over time. The underlying (reinsurance) asset also remains on the balance sheet of the insurer but the counterparty risks are managed better.
- It can improve the capital position of the insurer, both by reducing the peak credit risk exposures of the insurer. Additionally, it may be helpful in demonstrating to external parties, management's commitment to risk management.
- Investors have experience of modelling credit risk, so may charge a lower risk premium compared to other types of risk securitisation – although the credit crunch has severely increased the cost of credit risk for at least a temporary period
- Finally, this sort of transaction can provide a potential liquidity benefit at times when it is most needed, as the cash settlement amount is received upon the occurrence of the default, and before the reinsurance recovery would have been due. This might be expected to arise following a major catastrophe loss.

Taking reinsurance asset securitisation further, such assets could be securitised so that the insurer can crystallise the benefit of the reinsurance asset immediately. From the insurer's perspective, such a transaction would be more akin to a commutation or debt sale, as the insurer would swap the uncertain series of future cashflows for a fixed amount now.

Whether such a transaction would be viable would depend upon the market circumstances; however there are a number of challenges that would need to be overcome, including:

- Under current (undiscounted) accounting regimes, such a transaction would appear to immediately crystallise a loss equal to the difference between the discounted and undiscounted value of the reinsurance asset. Under Solvency II or Phase 2 or IFRS accounting for insurance this problem may be significantly diminished.
- For the transaction to be attractive to the insurer, they would want to be compensated for additional capital cost and uncertainty that they would suffer under such a commutation. This would suggest that investors should pay more than the discounted expected future cashflows arising from the reinsurance asset. Conversely, owing to the information asymmetries in the transaction, investors may wish to pay less than the expected value of the asset.
- Other frictional costs (such as tax and expenses) of the transaction may also make such an approach economically unviable under normal circumstances.
- In any event, the term or tenor of the asset being securitised would need to be sufficiently long to make it viable. Too short, and the reinsurance asset may have been repaid before the security is issued. This applies equally to many of the other insurance assets on the balance sheet of an insurer (such as instalment premiums and broker balances).
- The commercial relationship between insurer and reinsurer, particularly their respective set-off positions and the prospect of ongoing business is an important factor in reinsurance claims settlement. Therefore securitising such an asset risks breaking this link and thereby downgrading the asset sold to the investor. Any such a securitisation will need to protect investors, particularly from the refusal or slow payment scenario. The most straightforward approach to doing this would be to limit the proportion ceded to investors. The insurer will then retain an interest in the ongoing timeliness of recoveries.

4.3 Underwriting

There are two potential angles to securitisation of underwriting risk.

First, in this section 4.3, we consider a risk securitisation of the liabilities arising from the next years' underwriting.

Then, in section 4.4 on Goodwill, we look at the value securitisation of the renewal rights to an existing portfolio.

Example – motor

In 2005 Axa used a securitisation to obtain a form of multi-year aggregate loss ratio corridor protection for part of their French motor book. A loss ratio trigger was used, with the trigger reset annually to maintain the rating agency assessment of risk and an event limit and catastrophic exclusion to mitigate the severity risk to investors.

The cover is believed (by virtue of its rating) to have a loss ratio trigger significantly above Axa's planned loss ratio. Given the relative stability of motor premiums in France (compared to the UK) due to the tacit renewal system, the cover really protects against either a catastrophic increase in physical damage claims frequency or an increase in liability claims severity (such as might arise should the courts systematically increase their awards). In France, unlike the UK, the courts can also reopen settled claims in light of new medical evidence.

In 2007 Axa followed up with a securitisation combining motor insurance written by its subsidiaries in four other territories: Germany, Belgium, Italy and Spain. To date Axa are the only company to securitise high volume, high frequency, low severity personal lines classes of business.

One complexity with Axa's deal was obtaining the required form of solvency relief from the cover provided. Under Solvency II it is expected that securitisation will be treated equivalently (or at least more closely) to traditional reinsurance protection, particularly for companies gaining internal model approval.

Example – third party risk

OCIL – a captive insurer for the petrochemical industry securitised third party underwriting risk in 2005. The cover securitised was given on a claims made (rather than occurrence) basis, included physical damage as well as third party bodily damage risk, attached with a high excess, had event caps and featured a high degree of data provision for liability cover (as OCIL insures only a limited number of companies which were able to provide significant levels of historical data). All of these mean that this deal is not necessarily indicative of the possibility of being able to securitise a long-tailed casualty book.

Discussion

In practice any pricing risks could be laid off, however in practice it may be simpler to securitise just one or two elements of the pricing risk. Just as for reinsurance, the underwriting risk can be before or after expenses, and before or after inuring reinsurance (or indeed securitisations.)

Following the example of reinsurance, the type of underwriting risks that will most readily be securitised are those where there is a large amount of granular data that

can be analysed. As such, portfolios with a large numbers of small, homogeneous risks with a high-frequency, low-severity nature are most appropriate. This is clearly the form of the risks securitised by Axa in the example above. Additionally short-tailed classes and those without catastrophe weather exposures and good diversification from other risk types will be preferable.

As for other liability securitisations, a decision will be needed on the basis to be used. For example, whether the payment is to be based on the insurer's own loss or combined ratio or an industry measure or indeed some agreed pricing model. In fact, an insurer could seek to securitise just the frequency or severity aspects of the risk and thereby simplify the bond issue.

To provide relatively little basis risk for the insurer, a full pricing model approach would need to capture frequency and severity assumptions for differing types and possibly sizes of claims, correlations between assumptions and, if appropriate, classes of business and territories.

4.4 Goodwill

Securitisation of the goodwill of a general insurance portfolio is an example of an asset securitisation. Under it, the initial amount paid by investors gives them the right to take the benefit of the future income of the insurer from that portfolio. This could be the renewal rights for existing book of business, or indeed could extend to the profits arising from the existing policyholders and new policyholders up to an agreed volume of capacity.

The investor gains exposure specifically to the retention rate risk (and, unless laid off elsewhere the other underwriting risks). This could either be for an agreed number of years or in perpetuity according to the design of the bond.

From an investor's perspective, this approach could be attractive as it can give a very "pure" exposure to classes of business, particularly where such exposure might normally only be available otherwise via equity or other investment routes.

From the other side, the insurer gets the benefit of capitalising some of the value of the franchise of its business, either for increasing its underwriting capacity or its available financial resources. The former is analogous with the Sidecar approach developed to take advantage of the hard markets following the 2005 hurricanes; the latter is a bond alternative to a rights issue.

4.5 Intangibles

Intangible assets are not physical in nature and include such diverse factors as corporate intellectual property, brand recognition and consumer loyalty. Their value derives from the future profits (economic quasi-rents) expected to accrue to a firm due to the availability of these non-monetary assets.

Goodwill and intangibles may be measured by comparing market values and book values, figures often cited put their typical share at 40%-80% of market value, although financial institutions including insurance companies will normally have a lower share.

Typically, intangibles are not recognised on a company's balance sheet, unless they arise from a previous merger or acquisition transaction. In this case, goodwill is normally the balancing figure between the price paid and the net fair value of the acquired assets. IFRS 3 requires separate recognition of intangible assets if they can be properly identified, i.e. if they arise from contractual or other legal obligations or can be separated from the company and leased/sold/licensed or otherwise transferred.

Treatment of amortisation, charges or revaluation of intangibles and goodwill vary according to national GAAP and taxation rules. Of course these, as well as any additional regulation and capital requirements, will have a significant impact on the viability and format of potential securitisations.

The main sources of intangible assets include the following:

- research and development, patents, copyrights, intellectual property ("IP") in general,
- trademarks,
- brand recognition,
- customer lists (contacts, customer information);
- customer loyalty (repeated business by retention or inertia)
- organisational and tacit knowledge and the firm's human capital.

The most famous intellectual property capital based securities are probably the David Bowie bonds of the late 1990s, based on the expected royalty streams on the back catalogue of the British author. More recently, EMI considered securitising parts of their "evergreen" back catalogue as a way of considerably cheapening their cost of financing. Securitisation of many other types of IP royalties have also been discussed and put in practice, including medical royalties, movies, patents.

Most financial and insurance products are difficult or impossible to patent, and the economics of financial intermediation and risk pooling make other forms of commercialization of corporate knowledge, such as franchising, uneconomical.

Brand recognition, which facilitates customer acquisition, and customer information and retention appear as better candidates for possible securitisation.

A securitisation based on these assets, if at all possible and economically feasible, would likely be a form of asset monetisation (crystallisation of future revenues). Similar considerations to those for goodwill securitisation would apply.

Otherwise, we can observe that in a general insurance context, the intangible assets of the insurer are needed to enable the business to function on an ongoing basis. The only time when the insurer would no longer need them would be in the event of it going out of business.

Therefore, in practice either the insurer would need to pay some sort of licence fee for the right to use the intangibles (a sort of sale and lease-back type of arrangement), or the asset securitised would be the right to their use on insolvency (a form of credit derivative.)

It is hard to see whether either product would take off for most general insurers. For the former, it is not clear that the additional liquidity would be beneficial for a well-run insurer and indeed such an exercise may introduce additional capital costs in the form of an operational risk charge for failing to meet a business-critical fixed financial commitment.

For the latter, the risk of most large insurers going out of business is likely to be small. As a result, the benefit to the insurer of such a security is likely to be limited compared to their other capital needs. While information on a market price on the insolvency risk for an insurer may be useful, other more established financial products (such as credit default swaps) may be more a better route to this.

5 COMPARISON TO ALTERNATIVES

This section considers how securitisations compare with the other available risk transfer and financing arrangements:

- reinsurance,
- traditional capital: debt and equity,
- innovative capital: hybrid capital and contingent loans.

5.1 Comparison with reinsurance

Design

Securitisations can be designed to be highly customised, similar to reinsurance contracts. This can reduce the basis risk to the cedant, making the product more capital efficient, although there are disadvantages to this from the investor perspective.

Product cost

Setting transaction costs to one side, there are two competing forces here in the relative cost of securitisations and reinsurance. Reducing cost is that in theory capital markets will not charge for diversifiable risk, and as insurance risk has a beta of less than one, this should yield a benefit relative to a reinsurer whose portfolio will already bear a greater degree of correlation.

Working against this is the fact that major established reinsurers may have superior information in being able to select the risks they accept, and therefore price more effectively than the capital markets

Transaction cost

As few non-catastrophe securitisations have taken place to date, it is likely that the transaction costs will be more than current reinsurance commission levels. That said, as the process becomes established and products standardised, the costs should come down to a broadly equivalent level. Whether there will be a significant overall reduction in transaction costs is probably more likely to depend upon developments in the on-going reform efforts (e.g. in areas such as contract certainty, standardised wordings and electronic trading) of the traditionally inefficient insurance and reinsurance markets.

Market capacity

The global reinsurance market is small compared to the overall size of the capital markets. This means that many of the extreme risks that are not attractive to reinsurers owing to aggregate capacity limits (particularly in catastrophe reinsurance, but also potentially in other remote risks such as for latent claims risks) have scope to be absorbed by capital markets.

Relationships

A major difference between securitisations and reinsurers is the nature of contractual relationship applying in the insurance industry compared to the securities industry. In an insurance context, much of the practice has been established in a common law framework where a number of legal concepts apply (in particular: “follow the fortunes”, “utmost good faith”, “insurable interest” and “indemnity”). This means that often it is only once a claim has arisen that any detailed legal discussion takes place regarding the coverage or otherwise under the contract. By contrast, with contract law being applied, the legal work in the securities industry takes place in advance, with detailed negotiations being completed before the risk transfer takes place. Payment then arises following a detailed approach as set out in the contract.

Basis risk

Typically reinsurance contracts are designed to exactly match the inwards risks to the cedant. While this still leaves the reinsured with some risks (e.g. dispute, default or slow payment), the basis risks associated with securitisations can be significantly greater, particularly where payments are not made on an indemnity basis. If basis risk is too great, then potentially the capital benefits of the securitisation will be significantly diminished.

Disclosure

Reinsurance arrangements will normally involve very significant disclosure by the cedant prior to the transaction being agreed. This disclosure might be characterised as “private” in that it is to a limited audience and subject to confidentiality agreements. In contrast, securitisations will require the cedant to place a large amount of information relating to their business in the public domain so that the investors can judge and price the risk appropriately. It may be possible to limit this sort of disclosure to a degree by the use of third party consultants and rating agencies. These parties would receive a more detailed level of information (akin to that supplied to reinsurers) that they would then use to prepare a report made available to investors summarising the risks. While this overcomes many of the confidentiality challenges, a recent issue that has emerged with this arrangement is how these intermediaries, appointed and remunerated by the cedant, remain appropriately independent and provide a credible assessment of the risks.

Capital regime treatment

Two key points here are:

- Introduction of Solvency II – Solvency II provides a regulatory framework under which insurers can get recognition of risk transfer and capital relief that reflect the economic substance of these new structures. This provides considerable scope for their design to address the specific risks of each insurer beyond traditional reinsurance product design.
- Credit risk – under Solvency I rules, there is no penalty in capital terms for the credit risk element of reinsurance; by contrast, Solvency II provides an incentive for cedants to reduce credit risk – yielded in the case of securitisations by use of collateralisation to back the relevant liabilities.

Tax, accounting and regulatory regime treatment

The tax, accounting and regulatory treatment of securitisations is critical in making them attractive to both insurers and investors. Ideally securitisations will have been designed to optimise their treatment under each heading and would be expected to have at least as favourable a treatment as reinsurance, but in some cases (such as Solvency I) the existing regimes are designed around traditional reinsurance arrangements and make limited allowance for securitisations.

Tradability

While still relatively bespoke products at the moment, increasing use of and availability of insurance linked securitisations should mean greater scope for trading in such assets. This in turn might then be expected to increase the available capital investing in this asset class and as a result bring down the product cost down.

5.2 Comparison with debt and equity finance

In this section we set out some observations relating to the benefits of securitisations from other types of debt and equity finance. Clearly securitisations are a type of debt financing, and we do not propose to discuss in this section the factors that affect decisions on the optimal mix for insurers. We therefore compare securitisations here with other traditional sources of capital.

Risk securitisations, as bespoke and risk-linked products, can be a very efficient way of achieving capital relief compared to normal debt and equity finance, which do not typically provide focussed peak capital relief. By their use, it should be possible to raise normal debt and equity finance more sparingly.

For investors, securitisations can provide a source of much more targeted risk exposure. As an example, an investor who wished to acquire UK motor bodily injury risk might be able to achieve this through investment, however as most of the large UK motor insurers are part of diverse insurance operations or financial services operations, obtaining such specific risk exposure could prove difficult. For the insurer this might give rise to a reducing factor in the cost of capital; however this should be weighed against the increasing cost factors of small issue size, uncertain risks, potential for moral hazard and likely absence of secondary market.

As a relatively new capital market product, securitisations are likely to have much greater associated transaction costs than established products such as corporate debt or equity.

5.3 Comparison with innovative capital

Like hybrid capital, securitisations can provide capital relief to insurers. However whereas hybrid capital products increase the financial resources available to the insurer, risk securitisations reduce the capital requirements. Value securitisations are more similar to hybrid capital products in this respect.

Similarly, as hybrid capital, securitisations are an expense item, so their costs gain the benefit of tax relief.

Contingent loan facilities provide some similar features to risk securitisations; however they are more concerned with providing liquidity relief to insurers whereas risk securitisations provide capital relief instead.

All of these innovative capital market products will have greater transaction costs than traditional sources of capital and financing. As the newest of such products, we believe that securitisations are currently likely to attract the greatest associated costs of the three considered here.

6 POTENTIAL PITFALLS

As mentioned a number of times before, this type of securitisation is actually quite rare in the non-life industry. Here we set out some potential pitfalls that occurred to us; doubtless there are many others.

For complete success it is vital that regulatory approval for the transaction is obtained. Obtaining regulatory approval will lead to a reduction in the capital that the insurer is required to hold. A potential problem will be the inability of the insurer to achieve this approval. Possible reasons why the approval is not granted are:

- If the transaction is structured as reinsurance the regulator may decide that there is insufficient risk transfer for the deal to be considered reinsurance.
- The regulator may not be comfortable with the terms of the transaction if it feels that the security of policyholder's claims are jeopardised.
- Such transactions by their nature will be complex. The regulator may not fully understand the merits of the deal.

An insurance company may have to monitor a number of different capital measures. This is especially true at the moment with the introduction of Solvency II. The transaction may have to be measured against the current Solvency I basis, however, the structure may not achieve the same capital relief under Solvency II (the basis for which is still developing). In addition to the regulatory measures the insurer may have to have regard to rating agency capital measures.

This is a very new area for non-life insurers. Unlike conventional reinsurance there are very few documents that can be used as a starting point or as a reference for the participants. Such a transaction also introduces a number of complexities that are usually not present in conventional reinsurance. A potential pitfall for people considering securitisation of non-catastrophe risks is to think that the transaction is no more complex than a conventional reinsurance contract. Below is a list, certainly not exhaustive of some of the items that may have to be considered. Some of the items described below are dealt with in more detail.

General Considerations

- what classes of business will be covered,
- what time period should the agreement cover,
- how will claims experience be measured
- how will the transaction allow for the development of claims, in other words "when" and "how" will the ultimate claims experience be measured
- what form will the collateral take,
- what happens if the trigger levels are breached,
- how is the transaction priced?

Risks Covered

- what risks will be covered by the transaction,
- what claims are covered by the transaction,
- how will the transaction dovetail with existing reinsurance?

End of Contract

- what happens at the end of the contract period, can the transaction be commuted
- how can the insurer replace its capital if the transaction is not renewed?

Details of the bond

- term of the bond.
- how will the bond be issued (private or public placement)?
- if the bond has different tranches with different attachment points and different ratings, what happens to the higher tranches if the lower tranche is hit?

The AXA deal was based upon high frequency low severity risks, but excluded claims that originate from a catastrophic event. A potential pitfall would be not to define clearly what type of risks and claims are covered by the transaction. A good example would be claims that originate from a weather event. Weather related claims occur all the time, for example a localised storm or flood will create a number of property type claims. For some insurers such claims may represent the bulk of claims for the Home & Commercial property book. It would not make sense to exclude all these claims from the transaction. However, it may prove difficult to agree a suitable wording that includes these claims but at the same time protects the bondholders from truly catastrophic events, where does the dividing line lie?

The counterparties include the organisation that has structured the deal with the insurer as well as the bondholders. In theory the bondholders should price the transfer of risk lower than a reinsurer or indeed the regulator. This is because a reinsurer is not achieving any diversification whereas one of the main attractions of this investment to the bondholders is the diversification from more conventional bonds. A potential pitfall is to believe that this will make securitisation of risks more economical than conventional reinsurance. However, it is possible that the market will not understand the risks that it is taking on and apply a higher margin to compensate. In contrast a reinsurer should understand the risks and price accordingly.

7 ROLE FOR ACTUARIES

The actuary's role in the securitisation of non-catastrophe risks is similar to that of the modelling agent in a catastrophe securitisation, acting as technical expert on the portfolio risk. The role may include:

- modelling of the risk transfer arrangement in the context of the issuing insurer's overall portfolio to quantify the capital release and the economic benefits,
- risk modelling of the transaction on a stand-alone basis in support of structuring, credit ratings analysis and transaction pricing;
- loss determination prior to redemption
- valuation services for financial reporting of the SPV and other entities in the corporate chain
- evaluation of the securitisation on behalf of potential investors.

Actuaries working in ceding companies would seem to be best placed to quantify the capital benefits and assess the economic rationale using internal models.

Actuaries working in the capital advisory teams of investment banks will often be involved in the risk analysis and modelling as well as the structuring of the transaction. These activities are closely linked in the interests of achieving a suitable risk transfer for cedants and marketable securities for investors. A quantitative risk analysis will be incorporated in the offering documentation for investors. Using catastrophe securitisations as a template, the risk analysis section will need to cover: methodology; nature of the subject business and terms under which it is written; insurer processes for handling the business; model results including distribution of outcomes, probabilities of attachment and exhaustion. Scenario analyses may also be used to explore outcomes which are possible but not reflected in the historical data.

Actuaries working for rating agencies will often be involved in analysing the transaction as part of the credit rating process. In fact, non-catastrophe risk securitisations span the structured finance and the insurance rating divisions of rating agencies. The insurance analysts are usually involved for their familiarity with the underlying risks but also to assess the effect of the transaction on the financial strength of the company. This is essentially a 'look-back' analysis to ensure that the risk transfer does not alter the composition of risks of the cedant in such a way that makes the standard capital ratios inappropriate. Understanding which risks have been retained and which have been transferred will obviously be important in this exercise.

The same applies to actuaries working for regulators who will need to analyse the totality of a structure to ensure that the regulatory treatment recognises the economic substance of a transaction.

Independent actuaries are likely to perform roles in determining losses on bonds prior to their redemption or after a potential triggering event as well as providing actuarial services to the SPVs.

Actuaries are increasingly working in investor organisations in the selection of insurance-linked securities and portfolio management. Until now their involvement has been primarily focused on catastrophe risks, working alongside catastrophe modellers, meteorologists, geologists and mathematicians. If more non-catastrophe risk securitisations emerge then the role of the actuary within the investor organisation is likely to deepen.

8 CONCLUSION

This paper discussed non-life insurance linked securitisations outside of the more established catastrophe arena. We identified three main motivations for non-life securitisation:

- Transfer to the capital markets of some of the risks, especially peak exposures, associated with reserves from past business and underwriting risk from new and renewed business. Examples of reserving and underwriting risk transfer have been discussed in section 4. They include the OCIL and AXA transactions.
- Crystallisation and monetisation of future revenues. We identified reinsurance recoverables as a particularly good candidate. An example of this type of securitisation is the Hannover Re Merlin transaction.
- Additional sourcing of capital. This may take the form, for example, of contingent notes and securities akin to subordinated debt, or of setting up structures that allow the release of inefficiently tied-up capital, usually due to regulatory constraints. While specific examples of this type of securitisations exist in the life (XXX and AXXX securitisations) and catastrophe (contingent capital arrangements, side-cars) areas, we have not been able to identify non-catastrophe examples of this type yet.

It is fair to say that the development of non-life insurance linked securities of the non-catastrophe variety has been rather limited so far, both in terms of market width (different types of securities) and depth (volumes). Some of the reasons for this have been discussed in previous sections. These include:

- Complexity of underlying business, lack of established market models, rating difficulties, reliance on subjective actuarial opinions.
- Lack of alignment between sponsors' requirements and investors' appetite for risk (basis risk vs. demand for liquidity and standardisation). This may be exacerbated by the perceived opacity of securitisation, especially following the sub-prime crisis.
- Characteristics of non-life insurers and their products, e.g. we discussed how insurance intangibles are unlikely to be a source of future securitisations.
- Disincentives within capital regimes, accounting rules and taxation treatments
- Significant differences between the legal framework of insurance contracts ("utmost good faith", "follow the fortunes" and, in general, a certain degree of contractual opacity that often requires clarification in court or arbitration) and those common in the securities industry, where tight wording and automatic payments once the conditions in the contracts are realised are the norm.

Things may change if/once more and more standardised products are created and offered to investors, and as more specialised and knowledgeable investors (e.g. private equity and hedge funds) enter the market. Other drivers of change include:

- Implementation of Solvency II and other accounting developments are also likely change and possibly reverse existing disincentives and facilitate future securitisations..
- Development of accepted market models may help the development of products with semi-parametric triggers, these are more likely to be acceptable to investors as they reduce to some extent moral hazard and measurement issues.

Before embarking on a risk or value securitisation as described in this paper, it will be important to consider carefully the costs and benefits of them relative to traditional reinsurance and more established form of equity and debt financing. While securitisations have the potential to provide effective economic capital relief and diversify the funding sources of an insurer, the costs, disclosure requirements and the differences in the operation of the insurance and capital markets need to be properly understood.

As a result, it will be important for the regulatory, tax, accounting and capital implications to be properly understood so that the significant costs incurred achieve the desired aims. In addition, the fact that there have been very few non-catastrophe non-life insurance linked securitisations to date means that the pricing will be uncertain and the potential for the contract wording to fail to operate as planned is increased. This could leave the ceding insurer with significant unplanned loss exposures.

For non-life insurance value securitisations, care will be needed to ensure that these do not distort the way in which the insurer operates, nor that it becomes excessively reliant on this source of capital to finance new business: as the recent sub-prime crisis has shown, capital market financing can dry up very quickly when markets are subjected to extreme pressures.

Non-catastrophe securitisations present several opportunities for actuaries, both as risk modellers of the transaction on a stand-alone basis and as part of a portfolio, but also as providers of valuations during the life of the transaction and at redemption.

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<http://www.lanefinancialllc.com>

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Guy Carpenter

<http://www.guycarp.com/portal/extranet/insights/reports.html?vid=24>

Guy Carpenter produce amongst their "Insight Reports" annual reports on the catastrophe bond market. Their annual reports on the Reinsurance market also give useful commentary on areas such as rate movements, side car and ILW activity.

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