The UK Annuity Market: Risk and Capital Optimisation

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Despite the recent wave of deal activity and de-risking around annuity portfolios, there remains a high exposure to longevity risk in both the UK pension and insurance industries. Risk-based capital requirements can be onerous, especially when combined with the requirements for credit risk associated with the underlying asset portfolio. Additionally, the ongoing Solvency II debate has generated significant uncertainty for the industry around the long-term capital requirements of annuity writers. This paper provides some background on market developments and describes the options available to annuity writers for managing risk and capital.

INTRODUCTION

According to the UK's Office for National Statistics, the number of people aged over 100 in the UK is expected to increase seven-fold by the year 2035, and around one-third of all babies born in 2012 are expected to survive to age 100.

This dramatic increase in life expectancy is unlikely to be matched year for year by an increase in the average retirement age, and consequently retirement periods are likely to continue to increase. Such demographic shifts present both a challenge and an opportunity to insurers, reinsurers, investment banks and other companies who wish to take on longevity risk at an appropriate price. At the same time, the further development of risk-based capital regimes has prompted insurers to consider the business mix which will allow them to optimise the management and allocation of their capital.

With the move towards risk-based capital requirements, two distinct camps have arisen—those seeking to acquire annuity and longevity risk (either via a niche monoline offering or in order to diversify with their existing business), and those seeking to reduce their exposure due to uncertainty around future mortality improvements and concerns over future potential capital requirements, such as those under Solvency II.

MARKET DEVELOPMENTS

The market for the transfer of longevity risk and annuity portfolios in the UK continues to grow from its relative infancy. It can be thought of as consisting of two strands, one in respect of annuity portfolios within life insurers and reinsurers and the other in respect of corporate pension schemes.

Figure 1 summarises the major, publicly announced UK insured annuity transactions over the past five years. However, we note that more recently a number of non-public transactions have occurred involving both insurers and reinsurers that are not listed in the table.

In addition, significant volumes of transactions have occurred involving corporate pension schemes with about £4.4 billion of pension buy-outs and buy-ins and £2.2 billion of longevity swaps occurring in 2012 in the UK. In 2013, we also saw record breaking deals such as the £3.2 billion longevity swap transacted between Legal & General and the pension scheme of BAE Systems, which was the largest deal of its type ever transacted in the UK market.[1]

[1] Legal & General agrees largest ever longevity insurance deal with BAE Systems 2000 pension plan. http://www.legalandgeneralgroup.com/media-centre/press-releases/2013/group-news-release-1141.html

Figure 1 – Examples of major insured annuity transactions from 2008 to 2013

Year	Risk From	Risk To	Size	Deal Type
2013	Legal & General	Hannover Re	£2 bn	Longevity Swap
2013	Abbey Life/Rothesay Life	Hannover Re	£1 bn	Longevity Swap
2013	Lucida	Legal & General	£1.4 bn	Company Purchase
2012	Aegon	Deutsche Bank	€12 bn (nominal)	Longevity Swap
2012	Phoenix	Guardian Financial Services	£5 bn	Bulk Transfer
2012	Pension Insurance Corporation	Munich Re	£0.3 bn	Longevity Swap
2012	Pension Insurance Corporation	Munich Re	£0.4 bn	Longevity Swap
2011	Legal & General	RGA	£0.4 bn	Longevity Swap
2011	Rothesay Life	RGA	£1.1 bn	Longevity Swap
2011	Rothesay Life	Prudential Retirement	£0.5 bn	Longevity Swap
2011	Legal & General	RGA	£0.4 bn	Longevity Swap
2010	Swiss Re	Kortis	£0.05 bn	Longevity Bond
2010	Paternoster	Rothesay Life	£2.8 bn	Company Purchase
2010	Rothesay Life	Pacific Life Re	c£0.3 bn	Longevity Swap
2009	Aviva	RBS/Partner Re	£0.5 bn	Longevity Swap
2009	Rothesay Life	Pacific Life Re	c£0.5 bn	Longevity Swap
2009	Credit Suisse	Pacific Life Re	£0.3 bn	Longevity Swap
2008	Standard Life	Canada Life	£6.7 bn	Reinsurance
2008	Canada Life	J.P. Morgan	£0.5 bn	Longevity Swap
2008	Lucida	J.P. Morgan	£0.5 bn	Longevity Swap
2008	Friends Provident	Swiss Re	£1.7 bn	Reinsurance

In this paper, we explore the following key areas:

- Recent market developments
- Quantifying longevity risk and risk-based capital
- Risk mitigation options and capital solutions

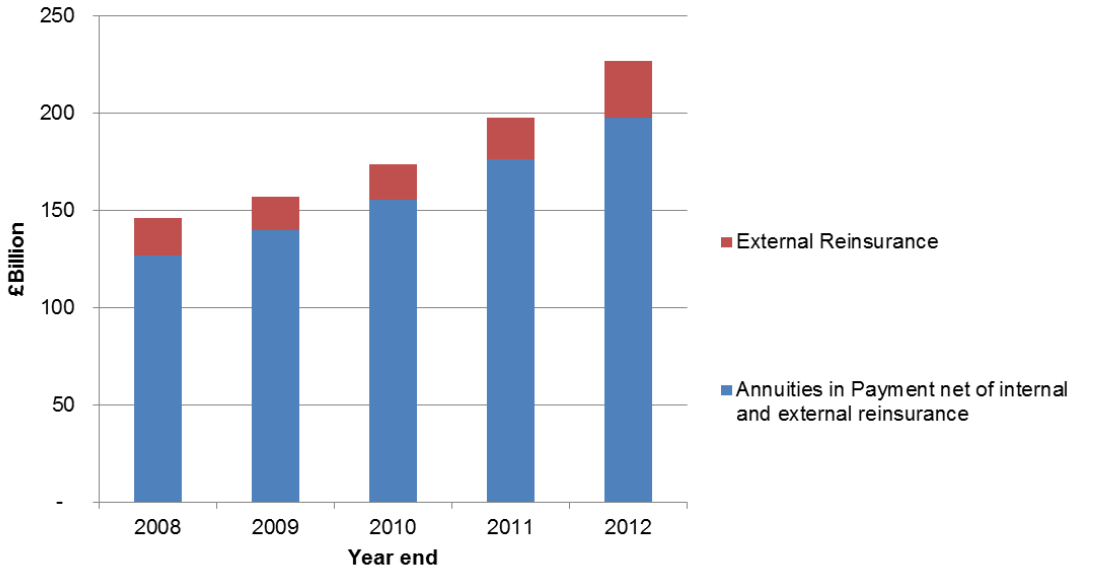
The volume of insured annuity business in the UK continues to grow steadily (Figure 2). Net liabilities are around 50% higher than they were five years ago and the buy-out of corporate pension schemes by insurers has contributed significantly to this growth. However, unlike protection business (which tends to be heavily reinsured), relatively little of the total risk held relating to insured annuity portfolios has, so far, been externally reinsured. Therefore, there is potentially a significant opportunity for further de-risking as well as new investors to replace those exiting the market.

QUANTIFYING LONGEVITY RISK FOR INSURERS

There are various ways to assess longevity risk. These typically range from actuarial approaches based on historical events and trends, to 'complex system' models which incorporate forward-looking aspects, such as the future development of cures for diseases such as heart disease or cancer.

In the absence of a complete set of calibration data, both of these approaches have relative advantages and disadvantages. In particular, parameterisation risk increases with model complexity as the model aims to incorporate increasing levels of forward-looking forecasting of unprecedented events. As with any risk model, it is important for users to understand the limitations of a chosen methodology.

Figure 2 - Total liabilities in respect of annuities-in-payment in UK insurance companies between 2008 and 2012



Some insurers apply economic capital frameworks using internal models with a different level of risk tolerance to the Solvency II framework. For example, an insurer may target a more conservative tolerance level, leading to higher target capital than that required by Solvency II.[2] In order to assess the risk distribution, an insurer may wish to develop and/or implement a more sophisticated approach—for example, a stochastic mortality model which is appropriately calibrated to the specific risk characteristics of the portfolio.

Setting tail risk events for the purposes of longevity risk capital requirements, either in a Solvency II or another risk-based capital framework is not straightforward. It can involve a significant level of expert judgement and accordingly a variety of practices in this regard have emerged.

A key consideration for practitioners is the time horizon over which the risk is assumed to become manifest. Longevity risk is long-tailed and therefore not necessarily readily suited to one-year value-at-risk (VaR) or tail value-at-risk (Tail VaR, also known as expected shortfall) measures, which are the default risk metrics for many risk-based capital calculations.

Unlike some other risks, the financial impact of an extreme one-year longevity event, i.e., much lower than expected mortality rates for a one year period, would be relatively limited if mortality rates then returned to normal levels. It is only when higher than expected mortality improvements persist over a longer period (prompting insurers to strengthen their assumptions around life expectancies) that the financial impact on annuity writers starts to become severe.

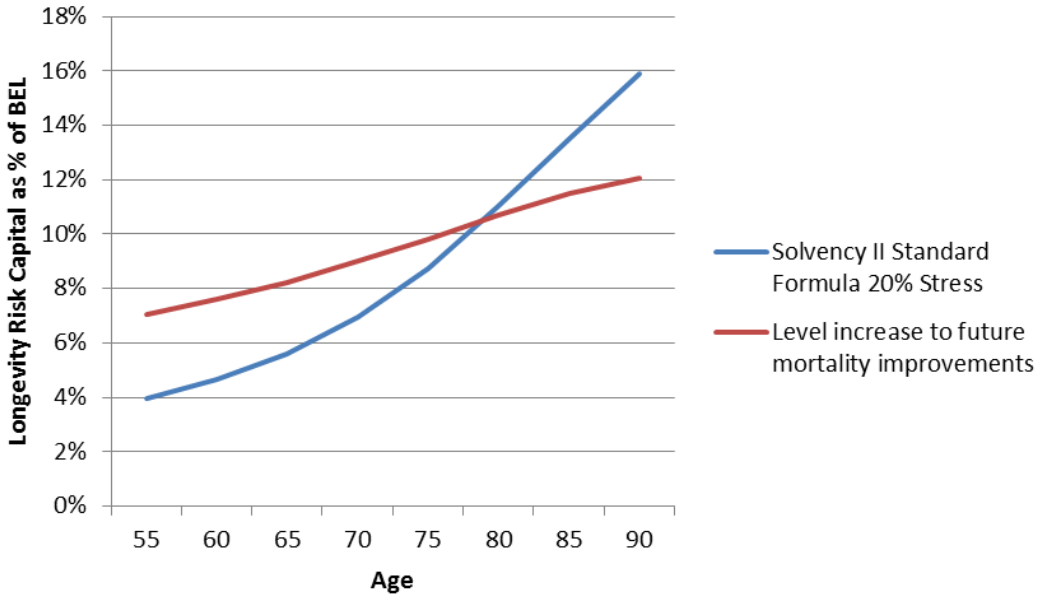
This long-term nature of longevity risk means that many annuity writers have tended to calibrate their longevity risk capital using a longer time horizon than one year, based on a commensurately lower risk tolerance level.

In practice, companies typically express a longevity stress as a combination of a permanent change to mortality rates and mortality improvement rates, rather than as a temporary change. The Solvency II standard formula stress test is a simplified stress to the balance sheet that applies a permanent and immediate reduction to assumed future mortality rates. Under the Solvency II Draft Implementing Measures, firms using the standard formula must hold longevity risk capital that is sufficient to withstand an immediate and permanent 20% decrease in mortality rates.

The impact of this stress on an annuity writer's capital requirements varies significantly depending on the age profile of the annuity portfolio. In particular, the longevity risk capital requirement (before diversification) as a percentage of the best estimate liability increases significantly as the age of the portfolio increases (blue line in Figure 3).

[2] For example, insurers may choose to target a more conservative capital position to maintain a certain credit rating or to reflect a more conservative risk appetite.

Figure 3 - Longevity Risk Capital as % of BEL - Standard Formula vs Increase to Improvements



Some consider the shape of the Solvency II longevity stress to be counterintuitive, as those at the oldest ages are potentially less likely to benefit from future medical advances or lifestyle changes likely to drive future increases in human longevity. Furthermore, the shape of the Solvency II standard formula stress could be a particular issue for closed blocks of business, the average age of which will increase over time.

Figure 3 shows the contrast between the standard formula stress and an illustrative stress that manifests itself as a level increase to future rates of mortality improvements (red line) rather than as a permanent decrease to mortality rates. This stress test results in a more linear level of longevity risk capital by age (as a percentage of best estimate liabilities); arguably this better reflects the way in which a longevity tail event might come about in practice.

Consequently, some major annuity writers have developed internal models that they believe more appropriately reflect the risks to which they are exposed, principally:

1. The risk of overestimating **current** rates of mortality
2. The risk that the **future trend** in mortality rates is more onerous than expected

Some firms stress these two risks simultaneously, whereas others treat them as distinct (but potentially correlated) risks. The level of correlation to be assumed is a matter of debate within the industry.

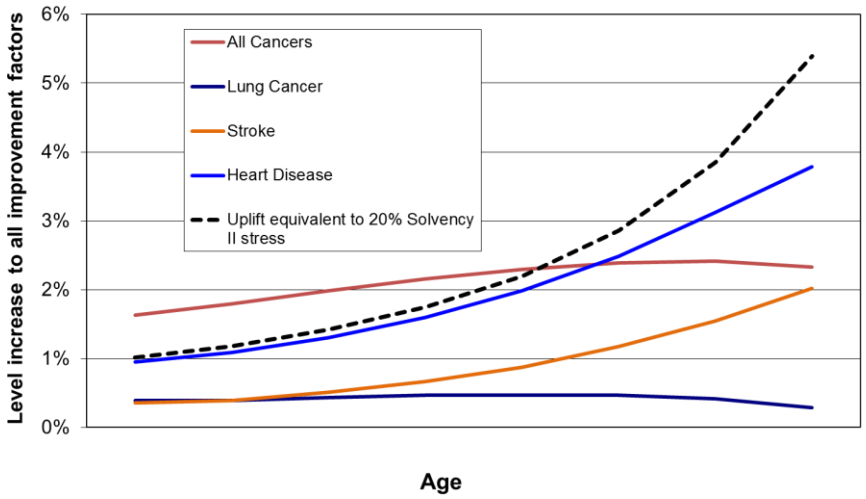
A number of firms also consider a third risk: the risk of one year of adverse random volatility in the number of deaths and in the annuity amounts of those lives that die during that year.

There is no single method of calibrating longevity stress tests. Methods used are likely to be combinations of some or all of the following, combined with expert opinion:

1. Stochastic mortality modelling
2. Cause of death modelling and narrative scenarios
3. Market benchmarking (including relative to the Solvency II standard formula)
4. Other sources, such as government health targets

Stochastic mortality modelling is now relatively common within the UK insurance industry, and there are a number of well publicised and documented stochastic models used by practitioners. These models are typically calibrated by reference to historical volatility of UK (or England and Wales) population mortality rates.

Figure 4 - Uplift to future improvements approximately equivalent to elimination over a five year period of selected causes of death



Cause of death modelling is also a useful tool in understanding the severity of longevity stresses in a context that users and management may find easier to understand. Although cause of death modelling is difficult to do with precision due to the complex interactions between the causes, it can be very useful either in defining stress tests in terms of causes of death, or to benchmark existing stresses relative to causes of death, e.g., "our longevity stress is broadly equivalent to the elimination of X% of deaths from heart disease".

Figure 4 illustrates, for a number of common causes of death and at various ages, the approximate uplift in future improvements that would be required to equate to the complete elimination of that cause of death over a five-year period. The uplifts broadly equivalent to the Solvency II standard formula stress test are also shown for comparative purposes.

The illustration is simplified and does not, for example, fully allow for the presence of co-morbidities, which might serve to reduce the impact of the elimination of a particular cause of death.

Government health targets can also be useful as a reference point when benchmarking the severity of longevity stress tests.

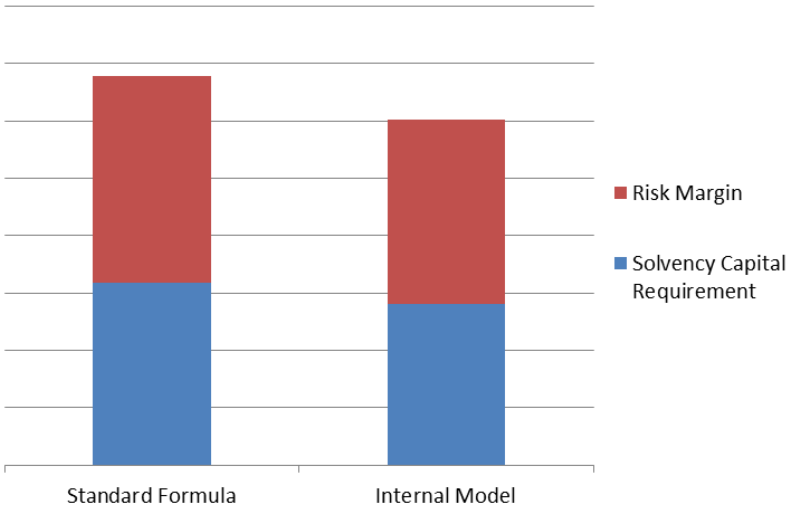
When constructing stress tests, it is important to have regard to the specific properties of the portfolio in question, as each portfolio will have its own risks and challenges. For example, it may be appropriate to hold additional risk capital where life expectancies in the annuity portfolio are more uncertain, e.g., for small or concentrated portfolios, or portfolios of enhanced or impaired annuities. Milliman consultants have carried out analysis using Milliman's proprietary stochastic mortality cash flow model, REVEAL™, to generate a large number of stochastic mortality simulations. These were used to derive a one year 1-in-200 capital requirement for a portfolio of annuity business which might represent the capital required under a Solvency II internal model. This was compared to the capital required under the Solvency II 20% standard formula stress test.

Figure 5 illustrates the Solvency Capital Requirement (SCR) and risk margin in respect of longevity risk only under the standard formula approach and under the internal model approach described above.

The chart indicates that a relatively significant reduction in capital requirement could potentially be achieved under an internal model, depending on the profile of the underlying portfolio.

The risk margin is also a potential issue for annuity writers, as the long-tailed nature of annuity business requires capital to be tied up for a long period of time. Under draft proposals, the risk margin is defined as 6% of the present value of the projected SCR (in respect of the non-hedgeable risks only) at each future annual time-step, which for annuity business could result in a significant requirement in addition to the best estimate liability and SCR.

Figure 5 - Comparison of longevity risk component of SCR and risk margin under standard formula and internal model



Many in the market, including the European Insurance CFO Forum, believe that the 6% cost of capital inherent in the risk margin formula is too high and that a lower rate might be more realistic.[3] Milliman's analysis of practices in companies' embedded value results[4] indicates that a 6% cost of capital lies at the high end of the range when it comes to calculating the cost of residual non-hedgeable risks, and less than 5% of companies surveyed had allowances of more than 4.5%.

Any reduction in capital requirements for non-hedgeable risks in respect of the SCR that may be obtainable through diversification benefits, reinsurance or other de-risking will also serve to reduce the risk margin to the extent that these capital benefits are expected to continue into the future.

SOLVENCY II – OTHER ISSUES

Despite the delay to the implementation of Solvency II, the proposed new regulatory framework is still high on the list of priorities of many annuity providers. In particular, the ongoing uncertainties surrounding Solvency II and future capital levels highlight the importance of a pro-active risk and capital management strategy for annuity portfolios.

It appears likely that annuity writers may not be permitted to take full advantage of their "hold to maturity" approach to corporate bonds and other matching asset classes in their annuity funds due to implicit and explicit capital charges levied on such investment strategies, although the final rules have not yet been published.

Matching adjustment

In early 2013, the European Insurance and Occupational Pensions Authority (EIOPA) investigated a number of options in its Long Term Guarantee Assessment (LTGA) exercise. To address concerns expressed by annuity writers, part of the LTGA tested the impact of the inclusion under Solvency II of a number of different 'matching adjustments'. The matching adjustment is applied to the calculation of the best estimate liabilities based on the nature of the assets backing them by means of an increase in the discount rate used to value the liabilities. This allows companies to reduce their balance sheet's exposure to short-term volatility in asset values that does not affect their ability to meet their long term liabilities.

If EIOPA's recommendations resulting from the recent LTGA were implemented, the Classic Matching Adjustment (CMA) would be adopted. The CMA can only be applied to insurance contracts with longevity exposures, no further premiums and effectively no policyholder options. Assets must be well matched to the liabilities, have fixed cash flows and be of investment grade (a maximum of 33% can be Quality Step 3, equivalent to BBB). Some minor changes to allow for the impact of immaterial mortality risk and the rebalancing of investment portfolios were also part of EIOPA's recommendations.

[3] Comments template on CEIOPS-CP 42, Consultations Paper on the Draft L2 Advice on TP – Risk Margin. http://www.cfoforum.nl/letters/CP42_CFO_Forum_response.pdf
[4] 2012 Embedded Value Results - Generating Value (Milliman publication)

The adoption of the slightly amended CMA, while generally good news for the insurance industry, includes a number of restrictions, for example on the quality of assets, which reduce the benefit from the matching adjustment compared to some of the other alternatives tested in the LTGA. Also, due to requirements to ring fence the portfolio to which the CMA is applied, the overall diversification benefits for a firm are reduced.

Spread risk

Following the LTGA, EIOPA has proposed the replacement of its previous approach, the Counter Cyclical Premium, with a new mechanism: the Volatility Balancer (VB). The initial proposal was that the VB is calculated as 20% of the spread on a reference asset portfolio over the relevant risk-free rate (determined at the currency level), less an allowance for default risk. In the Eurozone, where spreads for a specific country are higher than currency level spreads, an addition may be made to the VB.

However, current indications are that, once Omnibus II has been finalised, the details of the matching adjustment and VB may change. For example, it is widely expected that the VB will end up being specified as a significantly higher percentage of the reference spread than 20%. In addition, some of the restrictions around the matching adjustment, for example the rules around investment grade assets, are expected to be relaxed.

Whilst the VB deals with many of the perceived issues associated with the Counter Cyclical Premium, its introduction may be less beneficial for annuity writers. Under current proposals, the VB cannot be applied to business where the matching adjustment has been applied. Consequently, although the VB is a more predictable way to deal with spread risk, it may be less advantageous for annuity writers from a capital point of view compared to the previous suggested approach.

RISK MITIGATION OPTIONS AND CAPITAL SOLUTIONS

For those insurers who wish to reduce some or all of the risks related to their annuity portfolio and/or manage capital optimally the main options include:

1. Partial or full sale
2. Initial public offering (IPO)
3. Planned exit strategy
4. Asset-based reinsurance
5. Longevity swap
6. Risk diversification
7. VIF monetisation
8. Capital market solutions

Partial or full sale

This option is arguably the most effective means of risk transfer as all obligations in respect of the annuities are transferred to another party, usually with no residual risk to the original insurer. However, the sale of an insurer or block of insurance business can involve a costly and lengthy project, especially where an insurance business transfer (which must often be sanctioned by a court) may be required in order to complete the transaction.

Recent examples include the sale of Lucida to Legal & General in August 2013 and the partial sale of Rothesay Life by Goldman Sachs in October 2013.

IPO

An alternative to sale is to float the business on the stock exchange, either fully or partially. The most recent example is the successful IPO of Partnership Assurance Group, a niche impaired and enhanced annuity writer, in June 2013.

At the date of writing, the shareholders of Just Retirement, another specialised enhanced annuity writer, have just announced their intention to float the company on the London Stock Exchange.

Planned exit strategy

Related to the above options, an exit strategy at some planned date in the future can be an effective risk mitigation strategy for annuity writers.

As mentioned earlier, the nature of longevity means that any tails risks that might emerge will likely manifest over a prolonged period of time. For market participants with a shorter time horizon, such as private equity firms with a well-defined exit strategy, the exposure to such longevity tail risk is arguably significantly lower than that of traditional life companies who intend to hold the business for the full life of the portfolio.

This dynamic may be a key factor driving current market trends in the annuity market, for example in the UK enhanced annuity market, where two market leaders—Partnership Assurance Group and Just Retirement—are primarily owned by private equity firms[5, 6].

[5] Following the flotation of Partnership, private equity firm Cinven retained a 52% stake in the business.
[6] Just Retirement is currently controlled by certain funds managed by private equity firm Permira.

Asset-based reinsurance

Asset-based reinsurance involves transferring both asset risk and longevity risk by paying a single premium at the outset of the contract to a reinsurer. The reinsurer must then meet its share of the claims under the reinsurance treaty.

Given the challenges associated with credit risk on the underlying asset portfolio of an annuity portfolio, this can be attractive option on a number of levels. However, limited availability of such cover and price expectations can be a barrier for insurers.

Longevity swaps

Longevity swaps are a way for insurers to offload longevity risk without losing the potential upside on asset returns. A longevity swap effectively turns the uncertain annuity cash flows into fixed cash flows from the point of view of the cedant.

When structuring a longevity swap, there are a number of factors to consider. For example, longevity swaps can be index-based or indemnity-based.

An indemnity-based arrangement will be based on the actual mortality experience of the portfolio, thus ensuring that the cedant receives from the risk acquirer the actual annuity outgo cash flows of its annuity book.

On the other hand, an index-based swap involves the risk acquirer's payments being determined by reference to a mortality index based on, for example, the population mortality rates of the country in question. This can reduce the cost of entering into the swap for the cedant, but has the downside of residual basis risk between the actual mortality rates of the portfolio and those of the population on which the index is based. This basis risk can be difficult to evaluate accurately.

Risk diversification

This option involves insurers structuring themselves in such a way as to optimise any capital diversification benefits that may be available from the mix of business they write. For example, the mortality risk in life insurance business may provide a partial natural hedge against the longevity risk of an annuity portfolio. The Solvency II Draft Implementing Measures permit a -25% correlation to be assumed between these two risks, which can provide a competitive advantage in pricing or permit a greater return on capital employed.

VIF monetisation

Closely related to asset-based reinsurance, 'VIF monetisation' solutions involve realising some or all of the value of the in-force (VIF) portfolio by accelerating the release of statutory profits.

Due to the numerous potential benefits, such arrangements have increased in popularity in the European life industry, following a number of successful publicised deals relating to credit life portfolios in Spain and Portugal (for more details, we refer readers to earlier Milliman publications on VIF monetisation from July 2013 and November 2012).

A number of alternative structures can be considered, including:

- Contingent loan
- Financial reinsurance
- Reinsurance with risk transfer and full front-end commission (e.g. quota-share)
- VIF securitisation via the capital markets

In the specific context of annuity portfolios, contingent loan structures would seem the most feasible structure available in the current market environment. Such an arrangement might be attractive as a way to enhance liquidity, improve solvency under Solvency I (or Pillar I under the current UK solvency regime), as well as act as a hedge on a portion of the VIF asset, thus reducing volatility and improving the quality of tier 1 capital under Solvency II (or Pillar II in the UK).

While contingent loan or financial reinsurance structures are often viewed as 'remote-risk' instruments, this implicitly depends on the level of loan-to-value (LTV) ratios negotiated with the counterparty. Therefore, depending on the contractual terms, there can be an implicit element of risk transfer, in addition to the benefits listed above.

We cover insurance-linked securitisation (i.e., VIF securitisation) in the next sub-section.

Capital market solutions – Longevity swaps and VIF securitisation

Longevity swaps can be structured either as reinsurance arrangements or as capital markets transactions. Under the latter arrangement, the longevity risk is passed to capital markets investors via an investment bank.

In contrast to reinsurance arrangements, capital markets transactions do not fall under insurance regulations. Instead, they are treated as a derivative and fall within the remit of the International Swaps and Derivatives Association (ISDA).

There have been relatively few capital markets transactions in the UK market thus far. But, these deals could provide solutions in the long term for those pension schemes and insurers who wish to offload their longevity risk, given the size of pension and annuity liabilities relative to the appetite and capacity of reinsurers to accept such risk. From an investor's perspective, a longevity swap can provide access to the potential upside from a risk that is arguably less correlated to investment markets than other market risks.

As mentioned earlier, another capital market solution available to insurers is VIF securitisation. Precedent example transactions include Friends Provident's Box Hill Life Finance (2004) and Barclays Life's Gracechurch Life (2003), both of which included immediate annuity portfolios.

In addition to those described earlier for VIF monetisation, potential benefits include a significant level of risk transfer to the capital markets.

LONGEVITY MARKET CAPACITY

One of the barriers to the development of this market has been investors' reluctance to invest over the long periods required to service a longevity arrangement. However, innovative structures have been suggested to address this problem, such as transactions that restrict the swap to a fixed term with a commutation payment at the end of the term to reflect changes in life expectancy over the term of the transaction.

The development of an active capital market for longevity risk in the UK has not happened as quickly as many commentators expected. Even where we have seen transactions that were placed in the capital markets, or where the longevity risk was taken by non-insurance companies, such as investment banks, much of the longevity risk has ended up with reinsurers. However, the longevity capacity of insurers and reinsurers is ultimately limited without the development of the capital markets. A recent paper[7] from the Bank of International Settlements (BIS) estimates the reinsurance capacity for longevity risk at around $15bn (£10bn) per year. This capacity was stretched in 2011 when over £12bn of longevity risk transfer transactions were completed. Of the total estimated UK pension liabilities of over £1,000 billion, only £50 billion has been transferred so far.

Until 2012, nearly all large publicised longevity related transactions had been completed in the UK. Since then there have been a number of large longevity transactions outside of the UK. For example in 2012: a $26 billion pension buy-out between General Motors and the US insurer Prudential Financial; a $12 billion longevity swap between the Dutch insurer Aegon and Deutsche Bank; and a $7 billion pension buy-out between Verizon communications and Prudential Financial. Given the size of the non-UK transactions, the international reinsurers may reallocate their capital to support these larger transactions, in particular those outside of the EU where the uncertainty and impact of Solvency II is less keenly felt.

The consequences of this potential withdrawal of reinsurance capacity from the UK market, just at the time when the pressures resulting from the financial crises may be finally reducing and when there is an expectation of growth in the demand by employers (and trustees) for longevity transfer, are uncertain. It may drive up prices and attract reinsurance capacity to stay in the market, or it may finally lead to the maturing of the role of capital markets in longevity risk transfers.

PRODUCT INNOVATION

The Life & Longevity Markets Association (LLMA) is also providing a particular impetus to the growth of the longevity risk transfer market. The LLMA (whose members include leading insurers, reinsurers and investment banks) is a not-for-profit venture aiming to promote a liquid traded market in longevity and mortality-related risk. The LLMA has provided suggestions on the structure of standardised longevity derivatives, and has launched a longevity index designed to facilitate the growth of the market in index-based longevity hedges.

In addition, to help develop the market, issuers have launched innovative forms of longevity instruments. For example, Swiss Re issued its Kortis bond in 2010 to protect itself against longevity trend risk. Kortis's payments are dependent upon how closely correlated mortality improvements were between specific age groups in the UK and US populations. If there were a large divergence in the trend over eight years, then payments to investors would be reduced.

[7] "Longevity risk transfer markets, market structure, growth drivers and impediments, and potential risks" by the joint forum of BIS, August 2013

Another recent innovation has been to combine protection against extreme mortality risks and non-life natural catastrophes in a single bond. In late 2012, Swiss Re (as part of the second issue of its Mythen programme) issued a $120 million tranche of notes that combined North American hurricane risk with UK extreme mortality risk. The notes were rated B+ by S&P and run until 2016. Going forward, we may well see future bonds that combine longevity risk with other risks.

Packaging two risks together in one bond has attractions to both potential purchasers and to the issuer of the bonds. For an investor it potentially yields enhanced non-correlated returns relative to an equivalent single-risk bond. For the issuer it allows two or more risks, and the correlation between them, to be hedged with reduced costs (e.g., marketing, structuring etc.) compared to issuing two separate bonds. They also potentially achieve a better price if the combination of risks is attractive to investors.

CONCLUSIONS

The level of longevity risk retained in insurance companies and pension schemes in the UK remains relatively high, which offers an opportunity for investors with an interest in annuity portfolios or longevity risk.

Risk measurement is a key first step in evaluating options for managing and mitigating longevity risk. There are a variety of approaches being adopted in the insurance industry, none of which are yet viewed as best practice. Practitioners must gain confidence in their chosen risk methodology, and understand its limitations, when making management decisions.

Risk-based capital is a key decision driver for management and the ongoing Solvency II debate continues to bring uncertainty to future capital levels of the annuity market. This highlights the importance of a pro-active capital management strategy for annuity portfolios.

A number of risk mitigation options and capital solutions are available to annuity writers. Relative preferences will vary, depending on a number of factors, such as financial strength, risk appetite, overall risk profile, capital costs, market position and strategic objectives.

The capacity of reinsurers to take on longevity risk is finite, which leaves a role for capital market investors, and we have seen examples of such capital market transactions.

In order to optimise return on capital for annuity writers, it is necessary to structure businesses and de-risking strategies in such a way as to take full advantage of the opportunities offered by risk-based capital regimes to use capital efficiently.

However, depending upon the way Solvency II's requirements end up, such as in respect of the matching adjustment and volatility balancer for spread risk, annuity players could find a post-Solvency II world challenging.

HOW MILLIMAN CAN HELP

Milliman has supported numerous reinsurance, capital market and M&A transactions relating to longevity risk, annuity portfolios and life insurance portfolios. We have also supported numerous insurance companies with risk assessments for internal purposes and regulatory reporting.

Supplementing our actuarial capabilities, Milliman's global expertise in financial risk management and hedging solutions can be employed to develop credit risk mitigation strategies for annuity business.

Milliman's research activities and technology development supports an enhanced knowledge of specific markets and areas of technical focus. In particular, Milliman's stochastic longevity tool, Risk and Economic Volatility Evaluation of Annuitant Longevity™ (REVEAL™), supports sophisticated stochastic modelling of longevity risk of pensions and insured annuities using a wide range of risk variables. It has supported an enhanced understanding of longevity risk and pricing, both through our internal research program and on client assignments. This includes the following areas:

- Pricing and structuring of de-risking deals
- Evaluation of longevity capital market transactions
- Enhanced understanding of longevity 'tail' risks as part of an enterprise risk management approach
- Assessment of Solvency II and ICA capital requirements for longevity risk

ABOUT MILLIMAN

Milliman is among the world's largest providers of actuarial and related products and services. The firm has consulting practices in life insurance and financial services, property & casualty insurance, healthcare and employee benefits. Founded in 1947, Milliman is an independent firm with offices in major cities around the globe.

MILLIMAN IN EUROPE

Milliman maintains a strong and growing presence in Europe with more than 250 professional consultants serving clients from offices in Amsterdam, Brussels, Bucharest, Dublin, Dusseldorf, London, Madrid, Milan, Munich, Paris, Warsaw, and Zurich.

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