



Looking for emerging risks? See page 2

WELCOME

Welcome to Milliman's UK life insurance newsletter, which discusses current industry issues and aims to bring clarity to an increasingly complex environment.

This issue covers topics such as:

- new techniques for spotting emerging risks
- developments in financial reporting
- getting to grips with longevity
- developments in variable annuities

We hope you enjoy reading the newsletter and look forward to your feedback.

HAPPY NEW YEAR

AS WE begin the New Year it is customary to reflect over the past and look ahead to the future. Last year Milliman celebrated its 60th Anniversary. From the initial office started by Wendell Milliman back in 1947, we are now one of the world's largest independently owned actuarial and consulting firms with approximately 2,000 staff based in offices in most major cities worldwide. Financial Services has certainly seen a lot of change since 1947 (including our logo this year!) and our consultants have worked with clients to create and implement winning strategies and solutions in a wide range of different conditions.

"surprise" many, so it is clear that the sector is a long way from achieving a truly robust risk management infrastructure.

Our new CRISALIS process has been developed precisely to bring insight into the strategic risks which can bring organisations to their knees. Although the Solvency II deadline was moved back (by two years to 2012), insurance firms need to start planning for how they will implement its requirements, particularly those firms who aspire to take advantage of the benefits of an internal model.

Looking ahead, people continue to look for ways to develop the new market in longevity risk. Those holding unwanted longevity risk are not yet satisfied that the market offerings completely meet their needs in terms of design or price. Last year saw another explosion in the number of new entrants to this market, offering yet more solutions. It is probable that 2008 will see further development of capital markets solutions and the tougher market conditions may partially close the gap between the price aspirations of buyers and sellers.

The whole problem of providing meaningful retirement benefits for the next generations of pensioners at sensible cost has driven interest in variable annuity style products. During the last year, we helped clients to deliver a number of award winning products in this area.

The last year has also raised questions about whether a number of insurers have an independent future. It seems inevitable that 2008 will see a further bout of consolidation as companies look for growth in difficult market conditions.

With the prospect of difficult trading conditions continuing for some time, and the weight of a series of regulatory reviews, it is clear that 2008 will be another interesting year with both challenges and opportunities.



A major feature of last year was the "sub-prime" issue. The fall-out from this credit collapse is far-reaching, already claiming the jobs of a number of prominent CEO's, and Northern Rock's situation reminds us how quickly risks can unravel.

Risk management has been moving rapidly up the agenda as regulators and rating agencies have shown growing interest in firms' ability to operate enterprise-wide risk management. Events like sub-prime appeared to

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THE EMERGENCE OF RISK



THE PAST six months have been a dramatic roller-coaster for many financial services firms. The so-called "sub-prime" issue has created an impact crater well beyond the original issue and the collateral damage could be even worse than the main event. In the face of encouragement from every angle for firms to improve their risk management, the question is whether any risk management framework is capable of spotting things like sub-prime in advance.

COMPLEX ENVIRONMENT

The first step towards building a capability to look for emerging risks is to understand the environment in which those risks build. The business environment has become extremely complicated. Operating activities are now often split between a wide range of service providers and internal functions. This creates a large number of interfaces where problems can occur. At the same time, the functions themselves have become much more specialised making even internal functions quite fragmented.

For financial services, in particular, specialists have become very sophisticated at bundling different risks into packages and selling those on to the capital markets in various forms, often many times over. It is ultimately quite difficult to see exactly who is really bearing the burden of any given risk.

In the past, despite the relatively complicated nature of financial products, it has been possible to apply statistically based techniques to certain risks to make a pretty reasonable assessment of what is going on. The past decade has seen some quite sophisticated developments, such as stochastic models, which can help to assess the inherent variability in modelling results. Even these techniques, however, have their limitations when looking at risk in aggregate.

THE SPEED OF KNOWLEDGE

One feature of the modern world is that information moves around at an incredible rate. Developments such as wireless communications and the internet have dramatically increased the pace at which

information is shared and the breadth of its distribution. The information that is shared, however, is not always accurate so this sharing of perceptions or deliberate misinformation is not at all the same thing as achieving an efficient knowledge transfer.

The manner in which people react to information they receive is also key to understanding the environment. It has been traditional to assume that people behave "rationally", but in the real world this is often not the case. This is particularly important during "unusual" circumstances when previously rational individuals may make seemingly irrational choices. Emerging fields such as "behavioural finance" are starting to recognise this feature of financial markets in helping to explain market crashes/booms, etc. The same insight is needed when considering risk.

ADDING IT UP

In combination, the various features of the sector described above lead us to consider financial services as a complex

system which exhibits features such as emergent behaviour, self-organisation and high degrees of interconnectedness. Whilst the behaviour of such a system is often hard to predict, there are tools available to help spot the underlying trends and patterns.

CRiSALiS

Milliman's CRiSALiS methodology has been developed to give insight into the features of an organisation's risk exposure and to help identify areas where risks can emerge. Unlike traditional risk modelling approaches, CRiSALiS captures the full non-linearity of the situation and the interconnections between the different components of the risk exposure.

Taking the sub-prime situation as an example, an organisation could have identified its risk exposure as shown in the map below. The exposure map contains a number of items which are measurable and which can be tracked to identify signs of emerging risk. As the background conditions to the sub-prime scenario unfolded, some of these triggers would have begun to indicate an increase

in the risk level. For example, for this organisation the impact could come via the effect on their customers, or it could come through difficulty in borrowing.

By having prior knowledge of how the risk scenario might evolve, the organisation's background risk monitoring will begin to spot the signs of emerging risk early enough to start taking action. Because these behaviours are often the result of disparate components they are traditionally very hard to spot. Tackling the problem with tools designed for this situation gives a proper understanding of the actual drivers of the risk exposure and their interconnection.

MODELLING

In addition to creating a more optimal early warning system, CRiSALiS provides the basis for more robust modelling of the risk exposure. Traditional risk management approaches rely on statistical representations of the ultimate losses, but speak little about understanding the drivers of those losses. In situations where losses are very low frequency, it is doubtful that such models can be calibrated to give a proper indication of future loss.

The risk exposures captured by CRiSALiS are analysed to identify the key

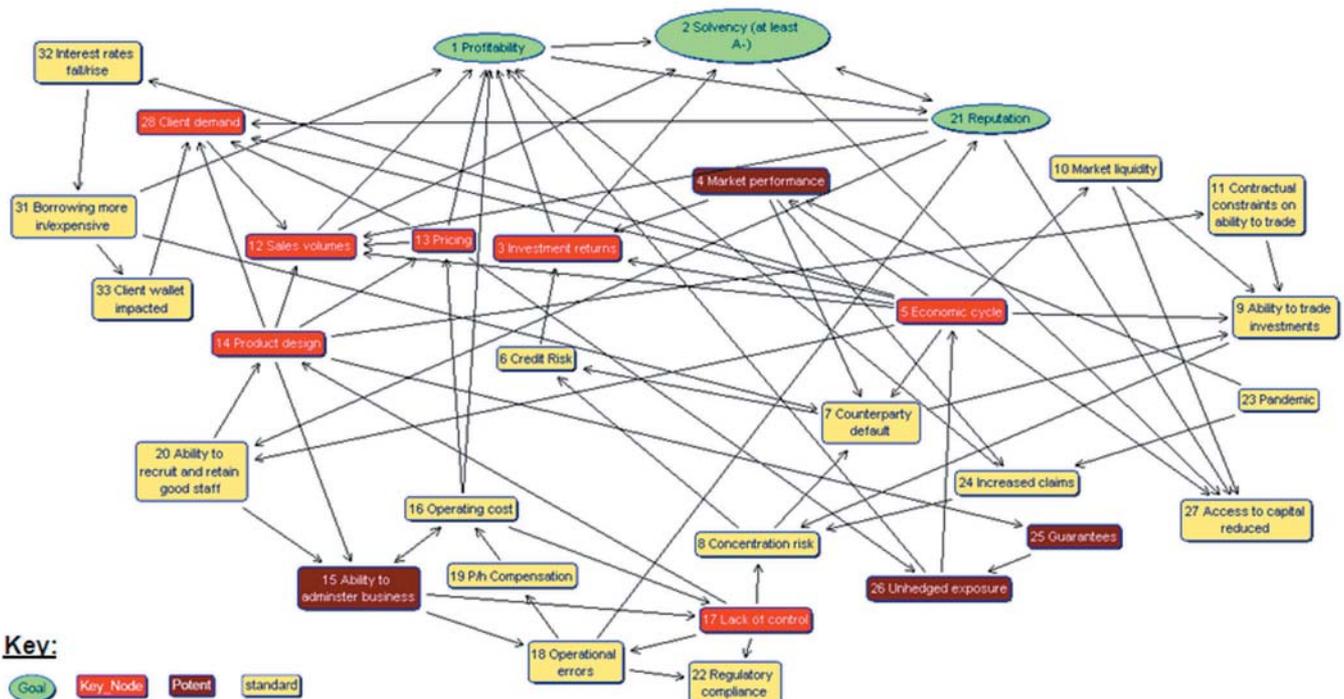
features of the exposure, such as: the most vulnerable parts of the business; key risk drivers; and interconnectivity that leads to rapid risk spirals. These form the basis of coherent scenario descriptions which, in aggregate, describe the risk exposure. These scenarios can be used for many different purposes, such as: inputs to economic capital calculations; strategic planning; and risk management activity.

One particularly useful feature of the analysis is that it can be used to identify the risk drivers which are most significant and hence identify the risk areas where a low risk tolerance should be maintained. Traditional risk approaches are not able to adequately capture this as they tend to look at risk types in a silo-based manner.

If you would like to see CRiSALiS in action to see what additional insights it could provide you with, we would be happy to arrange a demonstration – **please contact** neil.cattle@milliman.com or john.mckenzie@milliman.com.

Alternatively, you could attend one of the presentations we are giving on this topic in January (details on page 11).

EXAMPLE RISK MAP





PHASE II IFRS FOR LIFE INSURERS WORKSHOP

MILLIMAN RECENTLY led the one day Infoline International Financial Reporting Standards (“IFRS”) Workshop “Understanding Technical Implications of Phase II IFRS for Life Insurers” in December 2007. The day brought together accounting and actuarial professionals from across Europe to discuss the key issues around valuing insurance contracts. This article presents the key issues from the workshop.

TWO-PHASED APPROACH

Establishing an insurance contract standard has been a complex and slow process that led to the International Accounting Standards Board (IASB) implementing a two-phased approach.

Phase I involved a temporary standard “IFRS 4: Insurance Contracts” applying from 1.1.2005 that allowed existing local GAAP to continue with some modifications (see Figure 1, page 5) to achieve more consistency with the wider IASB Framework.

Phase II is a longer term standard that is currently under development by the IASB and is discussed further below.

TIMETABLE FOR PHASE II

A major development in Phase II was the release of the IASB Discussion Paper in May 2007. The paper summarises proposals for the main components of an accounting model for insurance contracts and investment contracts with discretionary participation features.

The comment period ended mid November 2007 and the IASB is expected to review the comment letters during 2008. An Exposure Draft is due early 2009. The Final Standard is expected one year later in 2010 and will be applied from 2011/2012 onwards.

“CURRENT EXIT VALUE”

The measurement basis proposed is called “current exit value”. This represents the amount to transfer the remaining contractual rights and obligations to another party and is essentially a fair value type measurement basis.

It requires a prospective valuation on a market consistent basis and may result in a gain or loss at issue. The IASB

INSURANCE PROJECT TIMELINE: PAST AND FUTURE



avoided the use of the term fair value to avoid confusion with other IASB projects underway, especially the Fair Value project jointly with the US based FASB.

THREE BUILDING BLOCKS

“Current Exit Value” is built around three key building blocks:

- 1. Estimates of future cashflows that are** explicit, consistent with observed market prices, using unbiased, current estimates (i.e. not locked in such as under FAS 60 US-GAAP) at an individual contract level
- 2. Discounting liabilities** at a rate reflecting the characteristics of the liability (timing, currency and liquidity) and not the assets backing the liability (unless the liability cash flows depend on the performance of the backing assets), adjusted for the risk of default on the contract
- 3. Allowance for two types of margins;** risk margins (price for bearing risk) and service margins (price for providing other services such as investment management)

Using market-based assumptions rather than entity specific assumptions will depart from



how many companies currently set their valuation bases, including those reporting under European Embedded Value (which uses many entity-specific assumptions). In addition, market-based experience studies may not be readily available for certain assumptions (e.g. expenses) nor be fully representative where a limited number of companies contribute to the studies.

Changes in the market’s view on assumptions will lead to immediate changes in income and will potentially result in more frequent, but smaller changes in income for IFRS reporting companies. Other key issues will include the calibration of risk margins and reliably splitting out the service margin.

LIMITATIONS

There are a number of limitations proposed on the measurement of “current exit value”:

- **Policyholder behaviour** such as the payment of future premiums and

conversion options can only be recognised where certain criteria are met

- **Policyholder participation** for the non-guaranteed elements can only be recognised where there is a legal or constructive obligation
- **Unbundling** may be required as a result of these limitations where the deposit and insurance elements can be separated and measured in a non-arbitrary way

Such limitations are likely to be unfamiliar to insurers when considering fair value. Under the proposals, future premiums can only be recognised if they are required to maintain a right to guaranteed insurability or the policyholder can be compelled to pay premiums or their inclusion leads to an increase in the liability. It will be out of line with many companies’ pricing methods not to include recurrent regular premiums on some life contracts.

Such proposals will lead to increased volatility in results for certain products and consequently, some companies are planning Phase II profit emergence impact studies later in 2008 in order to be ready to make an informed response to the Exposure Draft in early 2009.

THE ROAD TO CONVERGENCE

It is a race to the finish with the timetables for IFRS and Solvency II now closely aligned and European Embedded Value reporting fast evolving towards market-consistent reporting.

However, there still remain subtle differences in the methodologies of each and companies will need to carefully understand these and plan for the projects jointly to achieve leverage in systems implementations.

In addition, a recent significant development in the convergence of IFRS and US-GAAP is that the US SEC passed an Approved Rule for 2007 financial statements that foreign registrants are no longer required to undertake a reconciliation from IFRS to US-GAAP.

Achieving global convergence is becoming a reality.

For further information on the implications of Phase II, please contact emma.mcwilliam@milliman.com, philip.simpson@milliman.com or william.hines@milliman.com.

FIGURE 1: RECAP ON PHASE I IFRS 4 FOR INSURERS

IFRS 4 Phase I essentially allows companies to continue to report under their local GAAP basis with certain modifications for those contracts that transfer significant insurance risk (and investment contracts with discretionary participation contracts), as below:

- Removal of catastrophe reserves and claims equalisation provisions (impacting property and casualty players)
- Recognition of future losses immediately in the period they are identified
- Separation and valuation of embedded derivatives at fair value
- Disclosure of gains and losses on reinsurance
- Gross presentation of reinsurance liabilities with reinsurance receivables presented as financial assets

Companies converting to IFRS undertook significant product classification exercises to identify insurance contracts under IFRS 4, investment contracts under IAS 39: Financial Instruments and embedded derivatives that need to be measured at fair value. The classification as insurance or investment contracts significantly impacted profit emergence.

Under IFRS 4, some local GAAP policies were also allowed to continue such as undiscounted reserves, excessive prudence, investment management fees in excess of fair value, Deferred Acquisition Costs and non-uniform reporting.

Other policies could be introduced where these made the overall reporting of companies more relevant or reliable. These included using current market discount rates, a rebuttable presumption on allowing for future investment margins and shadow accounting. In addition, companies were allowed to account for acquisitions of insurance contracts at fair value.

Two main types of additional disclosures were also required around the reported amounts and the amount, timing and uncertainty of cash flows.

COPULA – MODELLING NON-LINEAR DEPENDENCY

ONE OF the reviews by the FSA regarding the Individual Capital Assessments (ICAs) is the need to allow for the non-linearity impacts in aggregating risks. Many firms use the correlation matrix approach to aggregate results from individual stress tests, which does not capture the fact that risks often correlate differently in extreme conditions. This can result in a material understatement of the capital required.

ARE CORRELATION MATRICES ADEQUATE?

The linear correlation matrix is intertwined with the Normal distribution. It is unlikely for individual risks to follow a strict Normal distribution with a constant dependence implied by the correlation matrix. This approach therefore overestimates the diversification benefits in the calculation of economic capital, because often dependence increases when diversification is most needed.

The use of a copula provides a more theoretically sound basis for aggregating risks allowing for non-linear correlations. The use of copulas has been growing in the non-life industry but has yet to take off in the life discipline.

WHAT IS A COPULA?

With a copula, dependency is viewed as a surface instead of a single number.

A copula is defined as a cumulative n-dimensional density function, C , with standard uniform marginal distributions. For a two-dimensional case, this can be expressed as:

$$\text{For } (U,V) \sim C(u, v) \text{ then } C(u, v) = \text{Probability } (U < u, V < v)$$

where U and V are uniformly distributed variables

Clearly not all random variables are uniformly distributed in the real world. However, if F is the cumulative distribution function of random variable X , and random variable U is uniformly distributed, then $F^{-1}_X(u)$ and $F(x)$ both have the same distribution assuming the inverse of F exists.

This property allows the user to generate random numbers from distribution functions that can be inverted, effectively making a Monte-Carlo simulation approach possible.

In summary, for every joint distribution F_{XY} , there is a copula C such that

$$F_{XY}(x,y) = C(F(x), F(y)) \text{ and } C(u, v) = F_{XY}(F^{-1}_X(u), F^{-1}_Y(v))$$

where $(U,V) \sim C(u, v)$ is the copula with margins $X \sim F_X$ and $Y \sim F_Y$

The cumulative n-dimensional random vector can therefore be split into two parts: (1) its marginal distributions and (2) the dependence structure (the copula).

This attribute makes the approach highly flexible. You can fit any marginal distribution function to individual risks and the shape of the marginal is not restricted to a specific form but can assume whichever best represents the behaviour of each risk. You then fit any joint distribution function i.e. the copula, across the marginals to capture dependency. There is a wide choice of dependence structures available. For example, you might like to correlate the upper-right tails only.

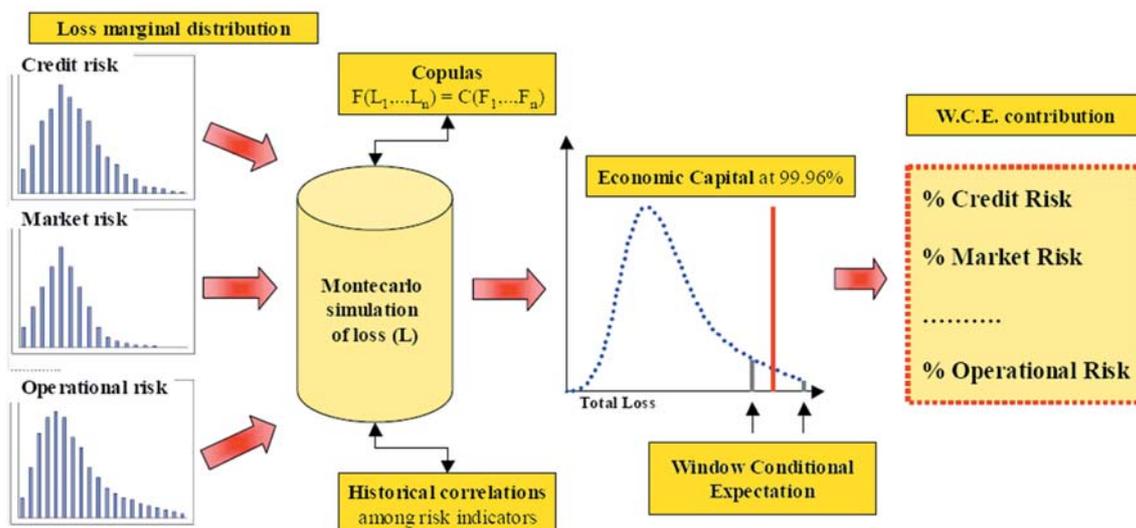
HOW IS A COPULA USED?

The application of a copula is illustrated in Figure 1. After fitting a suitable marginal distribution function to individual risks, the Monte-Carlo approach can be used in simulating the aggregate loss, and a copula captures the non-linear dependency. For an economic capital assessment, you can then obtain the Value-at-Risk at the required percentile. The aggregate Value-at-Risk can also be hypothecated back to the individual risk factors.

In summary, a copula captures the non-linear dependency and the marginals capture the individual risk distribution. It is a more robust approach for calculating diversification benefits under extreme conditions compared to the linear correlation matrix, which is flawed as it underestimates tail events.

For more information on the use of copulas, please contact farzana.ismail@milliman.com or neil.cantle@milliman.com

FIGURE 1 – APPLICATION OF A COPULA IN ECONOMIC CAPITAL ASSESSMENT



Source: Economic Capital Assessment via copulas: Aggregation and allocation of different risk types. Cornaglia A., G. Mignola, M. Morone. 2007.

MODELLING VOLATILITY FOR STRUCTURED FINANCE TRANSACTIONS INVOLVING LONGEVITY RISK



MANY UK PENSION schemes concerned with current levels of mortality improvement are looking to shed their liabilities – in some cases the risk of the entire pension scheme, in others the risk associated with certain groups of lives.

Meanwhile, many insurers believe they can favourably manage these liabilities, especially given their aptitude for managing longevity risk.

The confluence of these two factors has led to the emergence of a structured finance market attempting to mitigate the longevity risk in pension liabilities in the UK, a phenomenon that may take hold in other countries but has yet to do so. So for now, pensioners and insurers in the UK will continue to lead the way for this kind of transaction.

These transactions pose an exciting opportunity for those involved, but they also raise the need for effective methods of pricing and analysing the associated risks. In particular, these transactions are sensitive to several different breeds of

volatility, especially when it comes to longevity risk.

MODELLING VOLATILITY

Valuing pension and annuity liabilities poses several challenges.

Current deterministic valuation methodologies assume a single future mortality basis assumption. While sensitivity tests can be used to stress mortality assumptions, it has been very difficult to measure the probability that the stress situation can occur. For example, deterministic methods cannot reveal how the elimination of certain causes of death might affect overall longevity figures.

What kind of modelling should investors in structured finance transactions attempting to mitigate the longevity risk in pension liabilities ask for?

A stochastic liability approach can capture the complex risk profile of these

transactions, taking all the different variables into account. These variables include:

- Baseline mortality and longevity assumptions
- Mortality improvement assumptions
- Dates of death for participant and spouse (given a stochastically determined mortality assumption)
- Start dates for benefit payment
- Retirement benefit options
- Salary inflation
- Dates of end of employment
- Cause of death elimination scenarios, including:
 - Infections and parasitic disease
 - Neoplasms
 - Endocrine, nutritional, and metabolic
 - Circulatory disease

MODELLING VOLATILITY FOR STRUCTURED FINANCE TRANSACTIONS INVOLVING LONGEVITY RISK (CONTINUED)

- Respiratory disease
- Digestive disease
- Genitourinary disease
- External causes
- Cash flow patterns
- Economic liability values for all future years

OUR APPROACH TO VOLATILITY

We have developed a software tool called REVEAL ("Risk and Economic Volatility Evaluation of Annuitant Longevity") to model the volatility of pension and annuity liabilities, which can be used to measure the range of cash flow patterns under the defined transaction.

We look at historical England and Wales population mortality improvement rates over a user-defined period, allowing the user to select the reference period on which to project the rate and volatility of future mortality improvement.

We look at population mortality improvement rates and how they can vary by attained age cohorts, gender and cause of death.

We determine how a significant improvement in treating a certain condition (e.g. a 1% chance in a given year that death rates from cancer decrease by 25%) affects overall mortality improvement rates.

Alternatively, REVEAL allows users to enter their own assumptions for rates and volatility in mortality improvement rates (e.g. cohort projections, CMI Library, P-Spline scenarios, etc.).

INFORMED DECISIONS

What kinds of information can decision makers glean from this analysis? They can:

- Calculate economic liability values on an ongoing basis or on a plan termination basis
- Project monthly, quarterly, semi-annual or annual liability cash flows
- Generate important statistics to understand economic liability values:
 - Average stochastic value
 - Standard deviation of value
 - Percentile values
 - Contingent tail expectations

lives receiving £50,000 annuity benefit each year.

A simple block of liabilities has been chosen to illustrate the impact of volatility; in practice the liabilities will be more heterogeneous.

The first chart illustrates the annual Present Values of future liability cash flows without volatility in the future mortality assumption.

The second chart illustrates the annual Present Values of future liability cash flows with volatility in the future mortality assumption. While the expected base mortality assumptions in this second valuation are the same, we assume volatility in the base mortality table, in the base mortality improvement assumption, and stress improvements in various causes of death.

REVEAL can also be used to understand economic liability functionality based on US mortality tables and US population mortality improvement rates.

SAMPLE VALUATION

The following two charts illustrate future economic liability values (i.e. Present Value of future liability cash flows) for a block of 1,000 65-year-old male retired

CHART 1: PV LIABILITY CASH FLOWS WITHOUT VOLATILITY IN FUTURE MORTALITY ASSUMPTION.

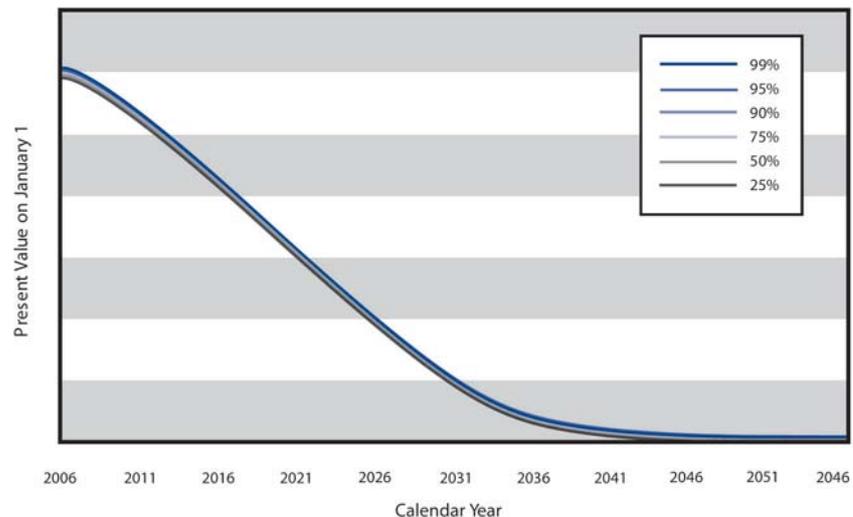
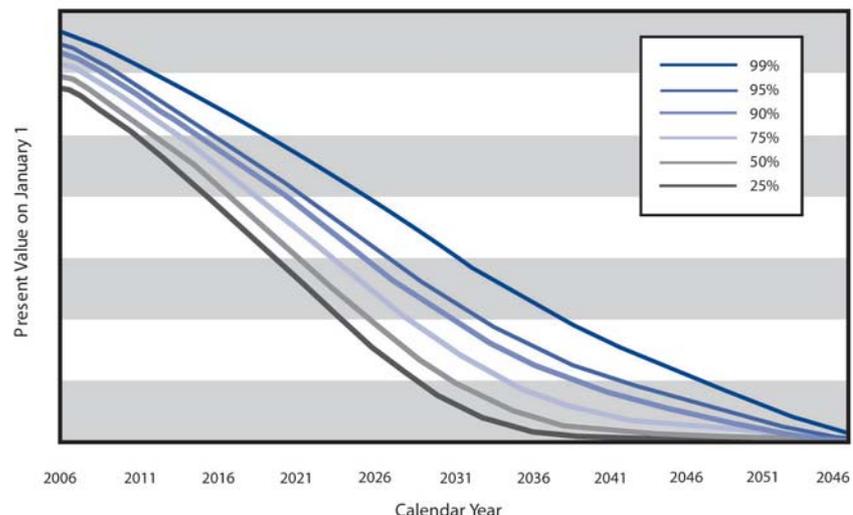


CHART 2: PV LIABILITY CASH FLOWS WITH VOLATILITY IN FUTURE MORTALITY ASSUMPTION.



The first chart shows that future economic liability values appear fairly predictable. However, the values appear stable because the valuation methodology did not reflect volatility in the future mortality rates.

The second chart shows a more realistic range of possible occurrences as future mortality experience is not set in stone. This analysis can be used to help determine the probability of the occurrence of a particular stress scenario.

Clearly, reflecting volatility in the

valuation methodology can have a sizeable effect on the results. In this example, 10 years from now the 90th percentile value is only 2% greater than the average value when we do not reflect volatility in the mortality assumption.

When we do reflect volatility in the mortality assumption, the 90th percentile value is more than 15% greater than the average value 10 years from now.

Results will vary depending on the demographics of the annuity block and the volatility assumptions chosen. The

results from these charts are for illustrative purposes only.

Stuart Silverman is a principal and consulting actuary in the New York office of Milliman. He has developed stochastic volatility models for a number of different markets in both the life insurance and pension arena. For more information, contact stuart.silverman@milliman.com, emma.mcwilliam@milliman.com or philip.simpson@milliman.com.

QIS3 – INITIAL RESULTS

WHAT WAS QIS3?

QIS3 was the Third Quantitative Impact Study undertaken by insurers across the EU, in April to June 2007, in preparation for the new European Solvency II regime expected to be implemented in 2012.

The results of QIS3 were published in late November 2007. This article looks at the key results arising from QIS3 for the UK life participants and looks forward to the next stages in the development of Solvency II.

KEY OBJECTIVES AND RESULTS

39 life companies, approximately 65% of the market by premium income, from the UK participated in QIS3 – a significant increase compared to QIS2.

QIS3 had a number of key objectives, including: testing the financial impact on firms and the suitability of the proposed calibration and requirements of Solvency II; Minimum Capital Requirement ("MCR"); Solvency Capital Requirement ("SCR"); and for the first time testing group, as well as solo, capital requirements.

SOLVENCY

Overall firms' solvency ratios were lower in QIS3 than under the current Solvency I regime. This was particularly noticeable for firms writing linked business and annuity providers (who also often write linked business). Linked firms suffered from the introduction of lapse catastrophe risk (at 75%) in QIS3 and annuity writers were impacted by the capital requirements for longevity and credit spread risks.

The spread of individual solvency ratios using the QIS3 methodology and calibration was considerably lower than using the Solvency I approach. Across the

UK life insurance industry as a whole there would be a material capital buffer in excess of the SCR and over 80% of firms had surplus capital compared to the QIS3 standard SCR.

MCR

One of QIS3's key objectives was to evaluate the "modular" approach to the calculation of the MCR using a relatively simple formula, but more complicated than the "compact" approach to the MCR which uses a proportion of the SCR (e.g. 35%). If the MCR and SCR are to be calculated in different ways it is important that the relationship between them remains stable and reasonable as the SCR and MCR are key points on the ladder of regulatory intervention.

QIS3 resulted in considerable variation in the MCR as a proportion of the SCR and the results were often not credible, for example many large with-profits firms and Friendly Societies had a negative ratio and in a number of cases the MCR was a negative multiple of the SCR.

Many firms preferred the compact approach to the modular approach and the design of the MCR is being reconsidered.

SCR

In general the calibration and standard methodology used for calculating the SCR performed better than the modular approach to the MCR. The most significant issues identified by UK life firms were that compared to internal models and ICAS results, the 75% lapse catastrophe component for linked life business was overly strong and some firms considered the size of the risk margins in the provisions for annuities as

not market consistent as they were higher than the probable cost of transferring a portfolio to a third party. A number of areas were also identified where it was thought the standard approach SCR may understate the level of risk compared to companies' internal models. In particular it was suggested that the basic SCR should be directly calculated from the risk components after allowing for the effects of profit sharing.

GROUPS

As this was the first QIS involving groups, conclusions were not clear. Most UK groups reported a lower QIS3 solvency position than under the current Insurance Group Directive's requirements, primarily due to the differences between the Solvency I and QIS3 standards for technical provisions and solo capital requirements. For UK Groups, the Group SCR was around 5% – 10% lower than the aggregated solo SCRs and groups using internal models showed further reductions in the range of 10% – 20%.

THE FUTURE

The next QIS, QIS4 is currently being defined and the European commission is seeking input from all interested parties. The QIS4 draft specification is expected to be released for public consultation in early 2008. The FSA is keen for companies to participate in QIS4 stating that "Industry participation in QIS4 is essential to ensure that the UK industry is not disadvantaged ...". It is currently not clear if participation in QIS4 will be mandatory.

If you would like to discuss the impact of QIS3 or how you may prepare for QIS4 further, please contact philip.simpson@milliman.com or john.mckenzie@milliman.com.



VARIABLE ANNUITY YEAR ROUND-UP

2007 COULD BE CONSIDERED as the year that variable annuity (VA) products established themselves as the “third wave” new product of choice for the retirement savings market across the UK and Europe. Multinational insurance companies have continued their strategic expansion of launching VA products in new markets, as well as improving their product propositions in the UK.

In 2007, Hartford launched Platinum, a combined GMAB / IB / DB product for the onshore UK pensions market in February. ING entered both the Spanish and Hungarian markets with a combined GMAB / DB product in March and June respectively. AXA continued its strategic global VA roll-out with launches in Spain (GMAB / WB / DB), France (GMWB / DB), Belgium (GMWB) and Australia (GMAB). The UK market saw another new entrant, Lincoln National with its i2Live GMWB / IB

product targeted at the pensions segment.

Aegon recently picked up another award in the UK for its ‘5 for life’ GMWB product. In late November it won the award for Innovation in Life & Pensions, provided by Scottish Financial Enterprise, for innovation in Scotland’s financial services industry. This comes on top of its award for Best Life Assurance Product in December 2006. Aegon also recently announced in early November a significant increase of 50 funds available for policyholders to select from that are subject to the guarantee, and also reported encouraging sales volumes overall.

AXA’s Estate Planning Bond product (a GMWB / DB) also won an award in May 2007 for most innovative Inheritance Tax Planning product. This product was launched in 2006 and is sold in the UK offshore market through AXA’s Isle of Man business.

Earlier in 2007, AXA announced that it’s Twinstar product, a regular premium GMIB sold in the German market, contributed 12.5% of German APE in Q4 2006, and a significantly higher proportion of new business profits. The year closed with Generali launching a GMAB / DB product in Italy.

If you would like to know more, Milliman has recently published a report in conjunction with Morgan Stanley on the Global Variable Annuity market. The report discusses why VA products have been so successful in the US and Japan, the growth potential in new global markets, barriers to entry and various strategic issues such as risk management.

**Please contact either
gary.finkelstein@milliman.com
or joshua.corrigan@milliman.com
if you would like to obtain a copy of
the report.**

DEVELOPMENTS IN THE UK LONGEVITY RESOURCES

THE CONTINUOUS Mortality Investigation (CMI) recently published Working Paper 30: CMI Library of Mortality Projection in November 2007. The Library provides a variety of projections to help practitioners develop and evaluate different projection methods, including:

- Interim Cohort and adjusted projections
- ONS National Population projections
- P-Spline projections
- Lee-Carter projection

Projections were included in addition to those in the draft Library released earlier in 2007, allowing for more flexibility in its use. A consistent naming structure was also set out following debate. The CMI has now corrected calculation errors identified in the draft Library.

The framework opens the way to considering new projection methods but those presented are based purely on the application of statistical techniques. Consequently, the projections should not be used blindly as some are a poor fit to past data and volatile to small changes. Whilst this is useful to illustrate the potential variation, care needs to be taken to ensure the projections selected are fit for purpose and are well understood.

Companies active in the annuity market undertake their own detailed statistical analysis of the latest experience information combined with intuitive and practical considerations such as medical advancements and competitive positioning to refine pricing and reserving bases. The recent releases from the Self-Administered Pension Schemes Review (Working Papers 29, 31 and 32) also provide useful

information to review base mortality and underwriting factor assumptions for those interested in the corporate pension buyout market.

With the cohort projections becoming increasingly outdated, as well as misshaped, companies will be looking to the new Library for reference tables to use in public disclosures. For as long as the emergence of an industry view remains elusive, companies will need to invest considerable resources in understanding all new methodologies, projections and their implications.

If you would like to discuss the impact of applying different projection methodologies, please contact tom.wicling@milliman.com, emma.mcwilliam@milliman.com or farzana.ismail@milliman.com.

CONFERENCES

MILLIMAN CONSULTANTS are speaking at a number of forthcoming events. If you have not signed up already, it may be possible to get a discount by mentioning that you are a Milliman client.

DATE	ORGANISER	EVENT
16 January	International Network of Actuarial Risk Managers (Co Sponsored by Milliman)	Webinar on Enterprise Risk Management
		Sign-up instructions at www.actuaries.org.uk/files/pdf/finance_invest/webcast_20080116.pdf
30 January	Infoline	Developing Approaches to Managing Strategic Risks
31 January		Workshop: Managing Strategic Risks
		Sign-up at www.infoline.org.uk/strategicrisks
27 February	Infoline	Designing and Distributing Variable Annuities
28 February		Workshop: Managing Variable Annuities Product Risk
		Sign-up at www.infoline.org.uk/annuities



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