The Actuarial Profession
making financial sense of the future

Action Group for Banking
How the integration of insurance and banking techniques and thinking can add real commercial value

Our Changing Future breakfast meeting
28 February 2008

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Action Group for Banking
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Jonathan McGuffie
Our Changing Future organising committee

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Action Group for Banking
How the integration of insurance and banking techniques and thinking can add real commercial value

Chris Hancorn
Chairman, Action Group for Banking

Our Changing Future breakfast meeting
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Agenda

- Action Group for Banking (*Chris Hancorn*)

1. A comparison of risks faced by banks and life insurers (*Patrick Kelliher*)
2. Warehouse innovation: funded reinsurance solutions and longevity risk (*David Moss*)
3. Lessons from the Basel journey (*Bruce Miller*)

AGB goals

- The AGB operates in areas where the actuarial and banking worlds overlap
- *Push:* To demonstrate where actuarial thinking and skills have been applied in a banking or financial context to add real commercial value
  - *=> create new career opportunities for the profession*
- *Pull:* To narrow the knowledge gap on tools and skills available in banking and finance that not all actuaries might be aware of
  - *=> draw new ideas and thinking into the profession*

AGB membership and activities

- *Push:* Actuaries working in:
  - *Retail banking*
  - *Bancassurance*
  - *Academia*
  - *Investment banking*
- *Pull:* Actuaries working with non actuaries in:
  - *Reinsurance*
  - *Pensions buy out companies*
  - *Consulting*
  - *Hedge funds*
  - *Investment banking*
- *Activities:*
  - *Articles and events showcasing push/pull themes*
  - *All material available at http://www.actuaries.org.uk/Display_Page.cgi?url=/finance_invest/banking.xml*
  - *Members Interest Group status from 1 March 2008*
    - *=> an opportunity for **you** to get involved*

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Comparing banks and life insurers

A comparison of risks faced by each

Patrick Kelliher
Senior Risk Manager (Actuarial)
Scottish Widows

Two-part article in The Actuary (December 2007 and February 2008)
http://www.the-actuary.org.uk/pdfs/07_12_42-43.pdf
http://www.actuaries.org.uk/files/pdf/finance_invest/08_01_comparingriskpart2.pdf

Overview

- If banking and life insurance professionals are to learn from each other, it is important to understand the similarities and differences in the risks faced by each.
- In some ways, UK life insurers and banks have very similar business models – both take money in from investors (policyholders / depositors); they invest (/ lend) these funds and earn a margin (management charge / interest spread) over what is credited back to investors.
- However their purpose is different – banks have a key role in providing liquidity to the economy through lending; while life insurers role is more about long term savings and protection.
- Banks also differ in having a strong high street presence while life insurers tend to rely on IFAs for distribution.
- Life insurers also differ in presenting results on an embedded value basis in their accounts, crystallising future margins on business written.

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Market Risk – Banks

- A key market risk for banks is lending at fixed rates where there is the option to redeem at par.
- However for UK banks, this risk is mitigated by the short term of fixed rate offerings, redemption penalties and interest rate hedges.
- UK banks will typically have trading desks which arrange hedges as well as dealing on their own account. The latter risks are well controlled, with systems capable of daily monitoring of VaR against limits while positions can usually be closed out within a fortnight.

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Market Risk – Life Insurers

- UK life insurers by contrast have considerable unhedged market risk exposure in respect of With-Profit Funds where there is a mismatch between the nominal guarantees typically offered with such policies and policyholder expectations that policies will be invested in real assets like equities and property.
- There is also the expectation of regular bonus additions to guarantees.
- Valuation is complicated as the investment mix and bonus additions are set at an aggregate level, meaning policies can't be valued on a stand-alone basis – the whole office must be projected simultaneously.
- Embedded values (of future management charges) are also vulnerable to market shocks, and difficult to hedge.
- Banks and life insurers do have a common market risk exposure in respect of final salary pension schemes.

Credit Risk

- For life insurers, the main credit risk relates to corporate bonds but these are generally investment grade and can be readily traded. The focus is on managing credit events such as takeovers and downgrades rather than defaults.
- Credit risk is a key risk for banks. Managing this is a core competence, particularly as the credit risk attaching to loans and mortgages is not readily transferable. As a result, banks tend to have strict lending criteria and much more detailed lending policies and exposure limits than life insurers in order to manage credit risk.
- However in recent times, banks have become adept at securitising their loans. Unfortunately some banks let standards slip as a result. The resulting rise in loan defaults and uncertainty as to who bears these losses has lead to recent market turbulence with rises in bond spreads – which affect life companies – as well as LIBOR.

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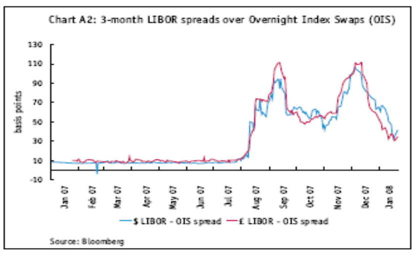
Credit Risk



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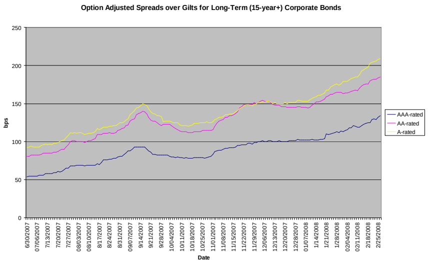
Credit Risk



Insurance Risk

- Life insurers are exposed to mortality (death) and morbidity (sickness) risk on protection products, as well as longevity risk (of people living longer) on annuities.
- While banks may not appear to be exposed to these risks, sickness and death can affect loan repayment, though this is mitigated if the borrowers takes out PPI.
- Banks may also be indirectly exposed to general insurance risk through subsidiaries or profit share arrangements.
- Banks are exposed to longevity risk on lifetime mortgage lending as the “no negative equity” guarantee will increase in value the longer people live.
- Finally both banks and life insurers have considerable longevity exposure through their final salary schemes.

Persistency Risk

- UK life insurers incur high commission and other up-front costs. Product regulation and market pressures mean that current products may take a number of years before these costs are recouped.
- Higher than expected lapses also lead to a write-down of embedded values, leading to adverse analyst comment.
- Banks do not experience such write-downs of expected future margins, but persistency is arguably as important as credit risk in terms of economic value, as early loan redemptions lead to a loss of future interest margins on that loan.
- Higher than expected retail deposit withdrawals may also have a cost if these have to be replaced by more expensive wholesale funds.

Expense Risk

- UK life insurers face considerable risk in relation to the expenses incurred over the term of policies, as stricter regulation of With-Profits and Unfair Contract Terms regulations (UTCCR) have limited the scope to increase charges to address cost overruns.
- They at least do not have to deal with the heavy ongoing fixed cost of a retail branch network.
- However for banks, there is usually scope to address cost overruns by increasing interest margins and varying charges, though the former is constrained by competition (and is not an option on tracker mortgages) while the latter may be constrained by current UTCCR challenges.

Liquidity Risk

- This is a key risk for banks who borrow short (e.g. instant withdrawal deposit a/c) and lend long (e.g.25-year mortgage). In particular, there is a risk of a run of deposit withdrawals leading an otherwise solvent bank to ruin.
- Banks devote considerable resources to liquidity scenario testing and are adept at securitising otherwise illiquid assets such as mortgages. However Northern Rock highlighted the problems of relying on securitisation as a source of funding.
- UK life insurers by contrast have little liquidity risk as they take in long term savings and invest in marketable assets. Moreover, until recently most insurers had surplus premium income over claims.
- However Equitable Life showed the possibility of mass surrenders akin to a run, albeit more protracted.

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Operational Risk

- UK life insurers have incurred considerable losses from the misselling of pension and mortgage endowments, often by banks acting as their Appointed Representative. Life insurers have tightened up systems and controls as a result, and will generally no longer bear the risk of banks misselling their products.
- Banks face ongoing losses from external fraud, but with tightening controls (e.g. chip & PIN) there are now indications that fraudsters are turning to life companies.
- Both banks and life insurers face regulatory challenges to charges, but for life insurers, the immediate impact would be more pronounced as this will lead to a write down of embedded values.

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Operational Risk

- Under Basel II, from 2008 operational risk will form part of bank's "Pillar I" minimum regulatory capital.
- Many banks are considering adopting the AMA approach to operational risk capital, based on internal models, and are investing heavily in operational risk evaluation, loss capture and modelling.
- Operational risk does not currently form part of life insurers regulatory capital (though it is likely to under Solvency II), but is currently covered under ICA (akin to the Basel II "Pillar II" ICAAP) and is a key source of additional capital "add-ons" by the FSA.

Aggregation – Banks

- For UK banks, credit risk is the most significant risk, though arguably persistency risk is as significant in terms of economic value destroyed.
- Market risk is substantially hedged while expense risk is not presently a problem due to bank's flexibility in recouping costs.
- Operational risk, while it may be significant on a stand-alone basis, may only make a modest contribution to post-diversification economic capital if low correlation is assumed.
- Liquidity risk, while very important, is more properly addressed by ensuring access to lines of credit rather than holding capital.

Aggregation – Life Insurers

- For UK life insurers, market risk is usually the largest risk, followed by persistency risk.
- Insurance risk will be large but generally taken as uncorrelated with these, so its contribution to diversified economic capital may be modest. However for some insurers with large annuity and / or term assurance books, it may be key.
- Credit and expense risk may be significant, particularly if they are assumed to be correlated with market risk.
- Operational risk may also be assumed to be correlated with market risk due to the impact of market falls on misselling claims. For some linked life offices with significant legacy misselling exposure, operational risk may even be the most significant risk faced.
- Liquidity risk economic capital requirements will be minimal.

Conclusion

- While there are some significant differences, UK banks and life insurers can usefully share experiences as well as tools and techniques for managing risk.
- For example, banks could learn from life insurers approach to quantifying persistency losses, as well as the impact of longevity on their pension schemes.
- Banks have a lot to teach life insurers in terms of management of credit risk, as well as securitisation techniques to pass on risks to the wider market.
- UK life insurers, in terms of their misselling experiences, the limitations they face under UTCCR, and product regulation, may offer an uncomfortable example to banks of adverse regulatory intervention.

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Warehouse Innovation

Funded Reinsurance solutions and Longevity risk

David Moss
Head of Business Development
Swiss Re Europe S.A., UK Branch

Article in The Actuary (August 2007) by Greg Solomon and Martina Moosmann
http://www.the-actuary.org.uk/pdfs/07_08_10.pdf

Agenda

- What is a Warehouse?
- Funded Reinsurance solutions
- Warehousing Longevity Risk

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What is a Warehouse?

- The *"Warehouse"* is a banking/treasury tool now being directly applied in the area of reinsurance financing for life companies
- *"Warehousing"* involves taking on risks/holding them and passing them on

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A Challenge for Life Companies

- Life companies have a large economic asset on their balance sheet, their embedded value
- For regulatory reporting, the insurer may often not take credit for this asset, as future profits "might not emerge"
- At inception of a new policy there are significant outflows, covering commission, admin & other expenses, reserves, solvency capital, etc
- With no credit for future profits, this puts a strain on the company's balance sheet – "new business strain"

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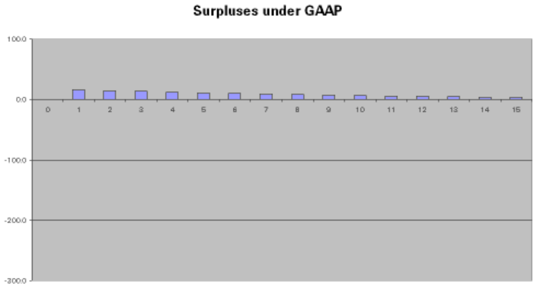
Realistic Portfolio Projections



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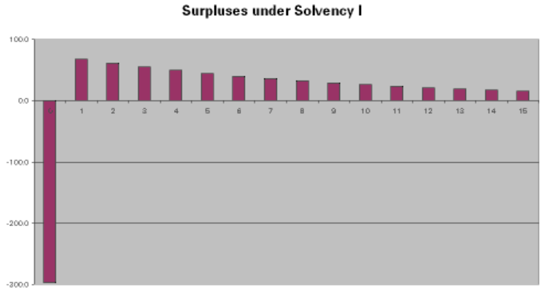
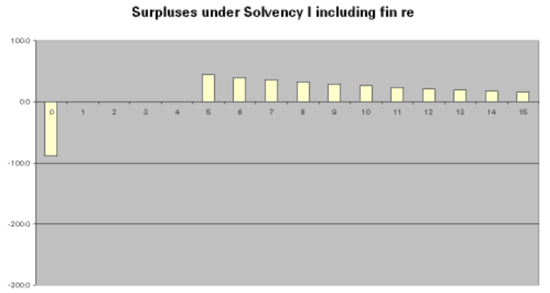
Conservatism Creates Capital Strain



Accelerating the Balance Sheet

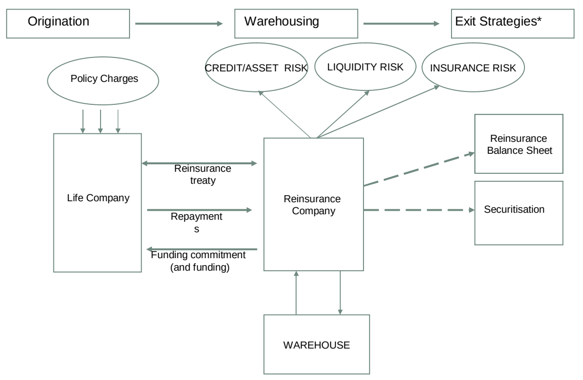
- Although the Regulator may not give the company credit for future profits, a reinsurer (or investors) might
- The company then effectively gets a capital boost in their regulatory accounts, and repays this capital out of future surpluses, as they emerge
- Effectively, a portion of the embedded value is provided up front, and is thus guaranteed to emerge

Acceleration eases Initial Strain



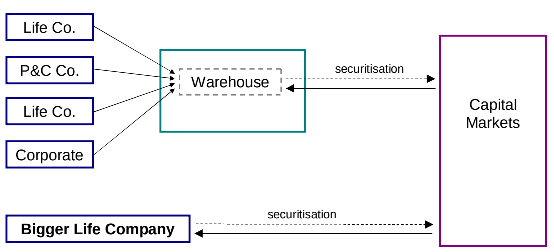
Variety of Solutions

- Cashless Reinsurance Financing
  - many structures exist
  - e.g. rather than paying the money, the money is owed
  - but sometimes liquidity is required/desired
- Securitisation of Embedded Value
  - investors pay money to buy a share of those future profits
  - transactions need to be very large to cover fixed costs
- Warehouse Financing
  - a cash facility which works for smaller deals



* depending on size of the accumulated business

The Warehouse



Advantages of the Warehouse

- Cash is available for deals which would be too small for a full securitisation
- The resulting pooled asset can be (but need not be) "repackaged" and securitised, depending on need for additional capacity, market conditions, etc
- Liquidity can be sourced in any form of debt, allowing for flexibility in amount & duration
- Diversification across transactions makes for a more "stable" and thus saleable repackaged asset
- Operational Leverage treatment

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Traded Longevity Bond Market – the Holy Grail?

- Sellers v Buyers
  - Terms of contract
  - Basis risk
- Enablers
  - Active primary market
  - Active reinsurance market
  - Published indices e.g. JPMorgan's LifeMetrics
  - Hedge funds

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Traded Longevity Bond Market –Warehousing

- Possible reinsurance / warehouse strategies
  - "buy and hold"
  - "buy and sell"
  - "buy, hold, restructure and sell"
  - "buy, hold and then sell"

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Lessons from the Basel journey

Bruce Miller
Standard Life Bank

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Lessons From the Basel Journey

- Introduction

- Basel 2 - significant undertaking for many banks.
- Recent insurer ICA experience has a number of parallels.
- More in depth Solvency 2, could have a similar impact to Basel 2.
- Many infrastructure requirements to gain approval for internal models.

Our History

SLB early adopter of Basel 2 IRB status.
Project launched during 2002.
Applied for IRB Waiver, June 2006
Formally approved, Mar 2007.
Pillar 2 ICAAP review May 2007.
ICG received June 2007.
Now established BAU.

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Lessons From the Basel Journey

BASEL 2 RULES
Moving goalposts?

- SLB Waiver submitted Jun '06…….
……. final BIPRU rules published Nov '06.

  - Rule interpretation
  - Rules verses Guidance
  - Best Practice established by peer review
  - Terminology and jargon

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Lessons From the Basel Journey

- SENIOR MANAGEMENT SUPPORT

- Involvement in the whole process.
- Early ‘buy-in’, sponsorship and designated responsibility.
- Understanding enough technical detail.
- Effective challenge of models and processes.
- No rubber stamp approval, even at board level.
- Robust framework for governance.
- Using internal models to make real business decisions.

“..reviews of insurers’ … ICAs. In the first round we focused on firms’ capital models and senior management’s understanding…. In the future we will increase our focus on……an integrated approach to risk and….using ICAs to make business decisions.”

FSA Business Plan 2008/09.

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Lessons From the Basel Journey

- DOCUMENTATION

  - **Significant resource burden**
  - **Organised into an evolving library**
  - **Controls in place to maintain and update.**
  - **Start early and continue throughout the project.**

  Example: IRB Modelling documentation

    - **What did you do?**
    - **What didn’t you do?**
    - **What did you base that decision on?**
    - **What are the weaknesses and mitigating conservatism?**

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Lessons From the Basel Journey

- MODELLING METHODOLOGY

- The level of model complexity must be carefully balanced.

- Excessive complexity beyond ‘fit for purpose’ may add little to the overall model performance and create other issues, such as:

  - Hinder understanding of the model by the stakeholders.
  - Undermine the effective use for business decisions.
  - Create unnecessary validation issues.
  - Make the stress testing process more difficult.

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Lessons From the Basel Journey

- VALIDATION
  - Initial validation of model development.
  - Ongoing regular reviews.
  - Defined validation framework.
  - Clear triggers for action.
  - Evidence of continuous improvement.
  - Accuracy increasing over time, conservatism reducing.

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Lessons From the Basel Journey

- OTHER ISSUES
- Data – quality, quantity & controls.
- Audit – heavy emphasis on audit to ensure controls are maintained.
- Consultants – decisions and governance cannot be outsourced.
- Pillar 3 Reconciliation – model outputs into accounting values.

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Discussion

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