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Longevity Swaps

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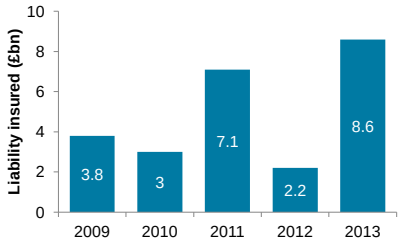
Agenda

- Market overview
- Understanding longevity risk
- Longevity insurance
- Structures – overview & transparency
- Corporate accounting treatment
- Execution
- Frequently asked questions
- Questions and discussion

Longevity Market Overview

Market background

- Insurers have used longevity swaps in reinsurance since the 1990s to manage their longevity risk exposure
- In 2009, Babcock became the first pension scheme to enter into a longevity swap with Credit Suisse to cover their pensioner liabilities
- The most notable pension scheme transactions since then have been RSA, BMW, Rolls Royce, British Airways, BAE Systems and AstraZeneca
- Legal & General have provided longevity insurance arrangements with Pilkington (£1bn) and BAE Systems (£4.9bn) with the whole market insuring £25bn to date
- Legal & General and Deutsche Bank are the two most active providers of longevity protection. There are 8 reinsurers actively participating with capacity of £0.5bn – £6bn+ per arrangement
- Longevity insurance transactions implemented to 31 December 2013



Year	Number of longevity transactions
2009	5
2010	1
2011	5
2012	2
2013	6

Typical "fact pattern" for schemes seeking longevity insurance

- **Large scheme** – sophisticated sponsoring employer with administrative scale
- **High allocation to fixed income investments** – once fixed income becomes a significant proportion of portfolio, returns are unlikely to exceed impact of an extension in life expectancy
- **Well-funded** – culmination of a "do-it-yourself" de-risking strategy
- **Tolerant of some risk** – scheme sponsor comfortable retaining modest market risk

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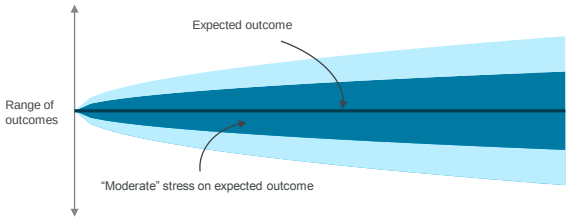
ECONOMIC RISK VS LONGEVITY RISK.

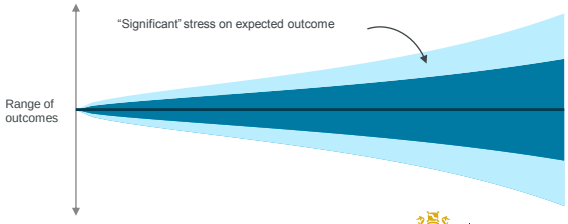
Economic Risk:

- Over time economic risk stabilises, principally through mean reversion.
- The scheme is rewarded for taking this risk through higher expected returns.



Longevity Risk:

- Over time longevity risk increases, gaining moment taking it away from current expectations.
- The scheme is not rewarded for taking this risk.



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Longevity Risk

BASE TABLE RISK	**SOURCE:**	Level – randomness can result in calibration being too high/ low Shape – may be good data at certain age groups but not others, may use a subjective extrapolation Data – extent of risk will depend on amount of data used to calibrate tables
FUTURE IMPROVEMENTS "TREND RISK"	**SOURCE:**	Subjectivity – very complex assumption exposed to unpredictable developments Future proofing – exposed to revised actuarial thinking Scheme size – can be swamped by base table risk for small schemes
IDIOSYNCRATIC RISK	**SOURCE:**	Random experience over and above model error Particularly affects smaller schemes but even larger schemes can be impacted by the survivorship of a few key pensioners

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Longevity Insurance

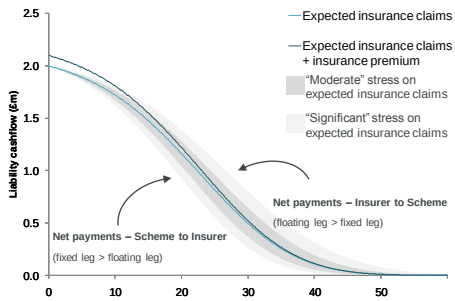
How does it work?

- The pension scheme agrees to make a schedule of payments to the insurer (known as the "**Fixed Leg**")
- In return, the insurer agrees to make payments to the scheme in relation to the insured pensioners' benefits for as long as the live (known as the "**Floating Leg**")
- In practice, the difference between the Fixed Leg and Floating Leg is exchanged (rather than each party making a separate payment)

What does it achieve?

- Converts an unknown future liability into a fixed liability cash flow
  - Provides protection for the pension scheme against the most significant liability risk it faces
  - Eases the challenge of managing assets against unknown future liabilities
  - Reduces reliance on sponsor covenant in the event of unexpected increases in longevity

Illustrative cash flows under longevity insurance contract



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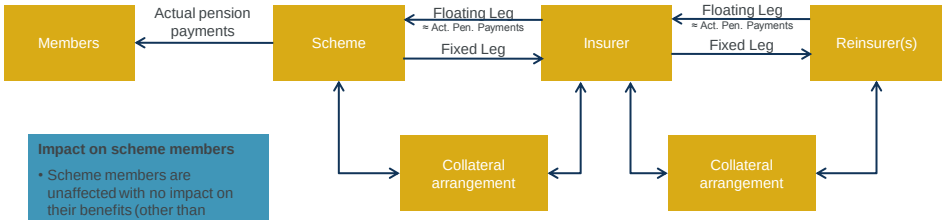
Structure Overview

Typical approach for cash flow calculations

- Adjusted each year to reflect actual pension increases in payment granted
- Typically reflect guaranteed benefits
- Reflect simplifications to actual benefits payable to members. For example, all annual increases may be applied at same date



Impact on scheme members

- Scheme members are unaffected with no impact on their benefits (other than improved security) or to the administration of them

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Longevity Insurance Transparency

Longevity insurance pricing is typically shown relative to a "comparator basis" (which may be the scheme's technical provisions assumptions) and can be broken down into a number of components as follows:

Risk takers' quotation	Intermediation fee	Counterparty credit charge
Present value of (re)insurer view of cash flows/ present value of cash flows on comparator basis	Fee charged by insurer to administer reinsurance arrangement (nil if no reinsurance)	Fee charged by insurer in relation to credit risk associated with reinsurer (nil if no reinsurance)

The risk takers quotation is the key driver behind the economics of the insurance and how it relates to the scheme's benchmark

- Each risk taker will form their own view on the base table to use and the scheme will have access to the cheapest
- The future improvement assumptions are typically CMI based (ranging from 2009 to 2011) with long term rates between 1.5% pa and 1.75% pa

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Accounting for Longevity Insurance

Impact of longevity insurance on technical provisions

- Impact on longevity assumptions for members not covered by insurance arrangement e.g. deferred members
- Reduced reliance on employer covenant as a result of insurance (i.e. less exposed to longevity shocks)

Company accounting treatment to date

- Exact treatment subject to views of advisors and auditors, but typical treatment to date under IAS 19 should be:
  - No impact on liabilities of pension scheme
  - Adjust assets by present value (using IAS 19 discount rate) of difference between fixed leg and floating leg (calculated using IAS 19 longevity assumptions)
  - Typically a day 1 accounting hit

Company accounting treatment going forwards

- Changes for years ending 31 December 2013 and beyond require "market value" to be considered:
  - Expectation is that the day 1 accounting impact would be zero
  - At future accounting dates, assets would be adjusted by the present value of difference between fixed leg and a market estimate of floating leg

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EXECUTION TIMELINE

- Key steps and timescales for implementing longevity insurance

	3-4 weeks	6-8 weeks	6-8 weeks	6-8 weeks
• Collate member data and benefit summary • Insurer quote request summary • Non Disclosure Agreement	• Reinsurer questions on data • Reinsurer initial quote request • Analysis of Reinsurer quotation terms and processes	• Reconcile comparator longevity assumption • Insurance quotation for Scheme • List of Reinsurers to enter exclusivity	• Consultant analyses quotation against agreed metrics • Quote feedback and second round submission • Confirm decision to enter execution process	• Finalise pricing and data reconciliation • Negotiate legal contracts • Execution

Once the strategic decision has been made to pursue longevity insurance the process from providing initial data to execution can be completed in under 6 months.

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LONGEVITY INSURANCE – FREQUENTLY ASKED QUESTIONS.

QUESTION	COMMENTS
What's the difference between longevity insurance and a longevity swap?	Longevity insurance is provided by an insurance company and a longevity swap is provided by an investment bank. The two approaches essentially achieve the same outcome for the pension scheme although there are different features affecting structure and cost. Insurance neither requires a transformation of legal form in the structure, nor suffers from reclassification risk. There are additional advantages such as the protection provided by the FSCS.
Is longevity insurance better than a buy-in?	Both solutions have advantages. Longevity insurance does not require a large upfront premium payment and allows the trustees to continue to manage the scheme's assets. A buy-in removes additional risks such as inflation and investment risk in relation to any member benefits covered.
Is the documentation complicated and lengthy?	Whilst the contracts for longevity insurance are typically longer than a buy-in or buyout policy there are a large number of precedents in the market and so the contracting process is much more efficient than it was, say, three years ago. For example, the whole process from first engaging with Legal & General to completion for the £3.2bn arrangement with the BAE Systems 2000 Pension Plan was completed in 5 months.
How will longevity hedging affect my chances of buy-in/buy-out?	Generally longevity insurance may be converted in to a buy-in / buy-out or novated to another insurer. Both of these would be subject to the buy-in / buy-out providers appetite in, and approach to, the market at the time. Annuity providers are accustomed to long dated contracts and Legal & General are currently quoting for a counterparty who already has longevity insurance in place.
Is the administration of these arrangements a burden?	Administration can be as complex or as simple as a pension scheme prefers covering both collateral and cash flow calculations. It is not uncommon for a scheme to follow the administration very closely for an initial period while they build experience and comfort. There may also be existence checking requirements placed on the scheme.
Can we include deferred members in the arrangement?	Legal & General observes very little appetite at indemnity pricing level at present in the market for deferred pensioner longevity solutions while index based solutions leave very significant basis risk with the scheme. It would be possible to implement an indemnity solution although this would have added complexities due to the range of options available to members (for instance, commutation).
My benefit structures are very complicated. Can I get a precise hedge?	Several longevity swaps have been structured to accommodate multiple benefit specifications. Different market counterparties have different approaches to benefits that are difficult to hedge precisely (eg, LPI(3,5) and CPI (0,3)). This may mean that the spread of prices for such benefit structures is wider than for other, simpler benefits. Typically, insurers are more open to these risks as part of their standard business.
How are future liability management exercises, such as Pension Increase Exchanges, impacted?	The longevity insurance is typically based on a defined data file detailing the scheme's liabilities. Contracts have been written allowing the scheme to perform a PIE exercise with either a formulaic change to both the fixed and floating legs, or an agreement to derive reasonable amendments at the time. If the scheme is considering a PIE exercise in the short term, it may make sense to complete that prior to entering the longevity insurance for simplicity, however, such an exercise can be enacted afterwards.

Expressions of individual views by members of the Institute and Faculty of Actuaries and its staff are encouraged.

The views expressed in this presentation are those of the presenter.

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