

Longevity Risk Conference

Challenges to Market Development

18 February 2005

Longevity: Massive Risk, Minimal Liquidity

- Longevity is a massive risk for society with no clear mechanism to facilitate its transfer

Size of Longevity Risk

- UK Life Companies: £100M
- UK Pension Funds: £700M
- UK Government: £trillions

Trading of Longevity Risk

- Bulk Annuity Market
 - Pension Funds → Life Companies: £1-3Bn per year
- Reassurance Market
 - Life Companies → Reassurers: £2-5Bn per year
 - Britannic £350M sale to Reassurer in early 2004
 - Royal London £1Bn sale to Prudential in late 2004
- Capital markets have the capacity to take on this risk in large size if packaged correctly

Other Risks of Relevance to Annuities/Pensions Trade in Liquid Markets

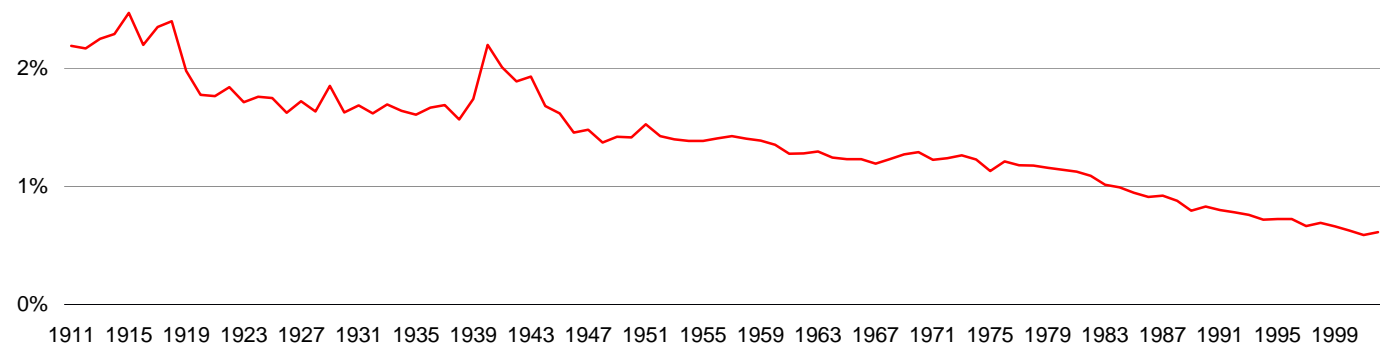
- Duration
- Inflation
- Credit

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Who will Buy Longevity Risk?

- Longevity does not have a natural home among traditional long dated bond buyers
- Equity buyers have high ROE objectives
- This suggests that we must approach non- traditional and non-UK investors

Mortality Rate for 55 Year Old Males 1911 – present day



Source 1911-1960 English Life Tables and Chester Beattie Tables, 1961 onwards ONS

Objectives

- Longevity risk and mortality risk are quite different
- Mortality risk is quite spiky and driven by short term events
- Longevity risk is long dated trend risk suggests long dated bonds are needed
- Who buys long dated bonds?
 - Life assurers
 - Pension funds

Can the Government Buy the Risk?

- **We believe that it is unlikely that the UK Government will be willing to be a receptacle for private sector longevity risk**
- Government already has more longevity risk than all other market participants combined
- Also indirectly exposed through healthcare costs which are highly correlated to increased longevity
- Longevity risk does not directly manifest itself as a risk in government accounts
- Government can (and is) helpful in providing data and analysis

Do Actuaries really Understand Longevity Risk?

- **Quantifying uncertainty around a base case longevity projection is a new area for actuaries**
- **Individual Capital Assessment for UK life assurers is a very helpful development**
- “What is the probability that mortality rates projected under the medium cohort are off by 10%?”- No consistent or widely accepted methodology in answering this question
- **Previous projections** are not great
 - Government Actuaries’ Projection of 2004 mortality rates for 55 year old males made in 1979: 1.26%
 - Actual ONS mortality rate: 0.64%
- **Future projections** suggest relatively little uncertainty
 - Government Actuaries’ Base Case Prediction of 2029 mortality rates for 55 year olds made in 2004: 0.44%
 - Government Actuaries’ High Life Expectancy Projection of 2029 mortality rates for 55 year olds made in 2004: 0.37%
- Pension fund projections and life assurance company projections are quite different

Interest Rates and Longevity

- The real risk faced by those exposed to longevity risk occurs when interest rates are low

- In high interest rate scenarios, longevity uncertainty is less important
- For example, 55 year old with a pension in payment of £10,000 per annum
- Life Expectancy = 24 years (i.e. individual is expected to live to 79)

Present Value of Pension	"What If" Scenario		% Change
	Life Expectancy = 24	Life Expectancy + 10% = 26.4	
Annuity at 5% interest	£138,000	£145,000	5.1%
Annuity at 10% interest	£90,000	£92,000	2.2%

- What pension funds/life assurers really care about is interest rate/longevity correlation risk

Do Life Assurers want to find a Solution?

- **Arguably finding a solution to the longevity problem may run counter to the commercial interests of life assurers**
- Probably the most nimble organisations taking on longevity risk
- If you solve the longevity risk problem (i.e. the primary uncertainty on the liability side), arguably any bond fund manager can enter the market
- Are life insurers simply disintermediating themselves?
- Potential counter-argument because of recent FSA rules (Individual Capital Assessment)
 - potential capital charges if risks unhedged
 - first time longevity uncertainty will attract explicit reserves

What do we need to do?

- **Areas for Research / Development work**
 - Increase understanding of uncertainty distribution around mean path
 - Foster deeper understanding of longevity risk outside traditional UK life companies and pensions funds
 - Innovation in the capital markets
 - Swiss Re, BNP transactions are a helpful starting point
 - Hybrid interest rate/longevity products