Sixth International Longevity Risk and Capital Markets Solutions Conference, Sydney

Life & Longevity Markets Association

The development of a longevity and mortality trading market

9 September 2010

Guy Coughlan, J.P. Morgan

Chair of the Technical Workstream Committee, LLMA

What is the LLMA?

- The **Life and Longevity Markets Association:**
  - Non-profit organisation funded by current members
  - Cross-industry association
  - Formally launched on February 1st 2010
- **Aim:** To promote the development of a liquid traded market in longevity and mortality related risk.
- **10 Current members:** (in alphabetical order): AXA, Deutsche Bank, J.P. Morgan, Legal & General, Morgan Stanley, Pension Corporation, Prudential, RBS, Swiss Re, UBS
- The LLMA is open to new members that share its aims and objectives, and that intend to be active participants in this market

The potential size of the longevity market is … large

Global market*:

- >$25 trillion

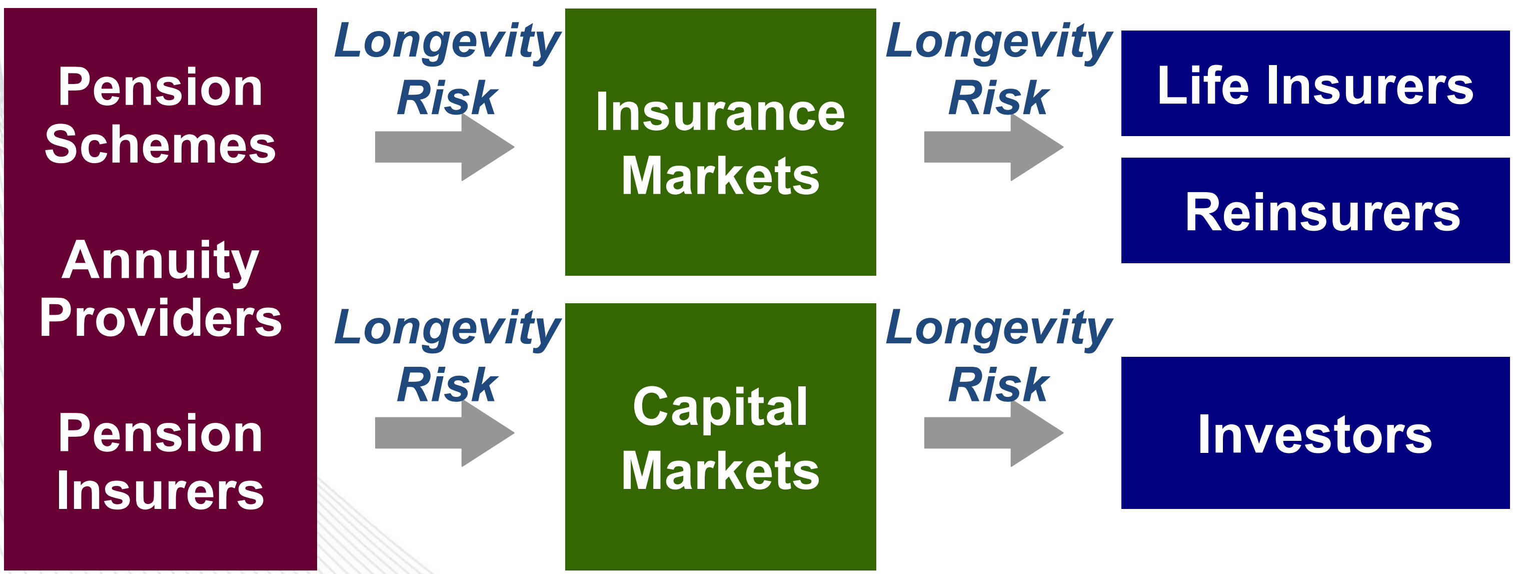
UK market:**

- UK government liabilities exceed £2000bn
  - c.£1170bn state pensions
  - c.£770bn unfunded
  - c.£160bn local authority
- Defined Benefit pension plans
  - Total pension liabilities = c.£1000bn
    - Of which pensions in payment = c.£500bn
- Annuity providers
  - c.£125bn
- Defined Contribution plans
  - Total assets = c.£450bn
    - Of which over age 55 = c.£150bn

* Source Swiss Re
** Source Prudential

Longevity risk has become a risk management subject for pension schemes and annuity providers

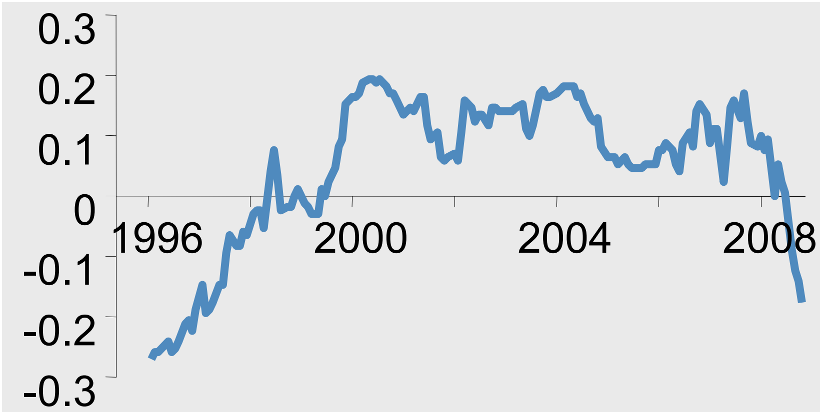
- Hedging longevity risk is now an important element of risk management for many organisations
- The capital markets are developing as an alternative channel for longevity hedging
  - Complementary to the insurance markets
  - Provide additional capacity and potential for liquidity



Investors see longevity as a new asset class providing diversification and risk premium

- **First movers:**
  - Specialist ILS funds and other hedge funds
  - Mainstream investors are exploring investments in longevity
- **Good Diversification**
  - Low correlation with other assets
  - Extreme event correlations favourable
- **Positive Risk Premium**
  - Expected return compares favourably with assets of similar risk levels
  - Depends on structure: swap vs. bond

Correlation[1]: Longevity returns vs FTSE



1) 5-year rolling correlation between interest rate adjusted life-annuity monthly returns and monthly FTSE total returns

Source: Ribeiro and Di Pietro, "Longevity Risk and Portfolio Allocation," Investment Strategies no. 57, J.P. Morgan

Challenges and barriers to market development

- General challenges
  - Complexity
  - Language
  - Long decision timescales
  - No consensus on longevity models
  - Poor understanding of longevity basis risk
  - Novelty

- Particular challenges for investors
  - Long maturity
  - Requirement for detailed transaction diligence
  - Illiquidity

➔ Standardisation and education can help to address these challenges

What does the LLMA do?

- Support development of consistent standards, methodologies, benchmarks and best practice
- Help build a liquid trading market, necessary to support the future demand for longevity protection sought by insurers and pension funds
- Output from the LLMA to include:
  - Standardised glossary of terms
  - Standardised longevity product definitions
  - Standardised documentation
  - Longevity indices and index methodologies
  - Standardised valuation/pricing model for longevity
  - Standardised framework for risk management

The work of the LLMA will bring significant benefits to the market for longevity risk management

- Key benefits:
  - Greater transparency, less complexity
  - Faster timescales for implementing longevity hedges
  - More streamlined due diligence
  - Greater certainty and comfort in terms of structure, documentation, pricing
  - Improved level of education across the market
  - A larger and more efficient market

- The work of the LLMA should help develop a robust and sustainable pension and annuity industry

LLMA governance

- The Board is the governing body of LLMA
  - One representative from each of the current member firms
- Workstreams have been defined to further the initiative and are resourced by the member firms
  - There are four Workstreams, each with a Workstream Chair:
    - Technical Workstream
    - Documentation Workstream
    - Accessibility Workstream
    - Governance Workstream
  - A Project Committee oversees the Workstreams
  - Workstreams are staffed by individuals from the member firms

LLMA workstreams

- **Technical Workstream**
  - Focus on developing standards important for facilitating transactions. Includes four key project substreams:
    1. Products & collateral
    2. Data & Indices
    3. Valuation & Risk Management
    4. Market Infrastructure
- **Documentation Workstream**
  - Focus on developing standardised documents for transactions and working with ISDA
- **Accessibility Workstream**
  - Focus on distributing standards and IP to the market
- **Governance Workstream**
  - Focus on the governance of the LLMA

LLMA Longevity Index Framework

- **On 18 August 2010 the LLMA published a draft Longevity Index Framework**
  - First major product release for the LLMA
  - Product of the Technical Workstream
  - Contributed by all LLMA members
- **Purpose of the “Framework”**
  - To provide the market with a widely accepted set of standards for the development of longevity indices, which can be used to build public and proprietary longevity indices
  - A framework and not a recipe
- **What is a longevity index?**
  - A longevity index is a body of data relating to the mortality, survivorship and life expectancy of a specified group of individuals, calculated according to robust and well-defined algorithms and processes.

The Longevity Index Framework aims to be the common denominator in all longevity indices

- **Standard conceptual basis and standard guidelines for index methodology**
  - 10 principles to which longevity indices should adhere
  - Standard methodological guidelines that provide a template for building indices
- **Such standardisation should**
  - Encourage much needed consistency
  - Provide greater comfort to first-time counterparties
  - Reduce transaction due diligence time
- **The LLMA encourages all market participants to use the framework for all longevity/mortality indices**
  - Public indices based on national population
  - Proprietary, customised indices associated with individual pension plans, annuity portfolios and life portfolios

The 10 "Principles" are really just common sense

1. Tradability
2. Transparency
3. Robustness
4. Objectivity
5. Simplicity
6. Clear Governance
7. Timeliness
8. Continuity
9. Consistency
10. Universality

Principle 2: Transparency

- **Transparency**
  - **Full Disclosure:** Full and detailed disclosure of data sources, methodology, algorithms, rules, degree of discretion and governance procedures
  - **Historical Data:** Easy availability of historical data
  - **Clear Rules:** Rules for dealing with missing data or late data need to be clear
  - **Minimal Scope for Discretion:** Discretionary scope must be limited where possible and discretionary decisions concerning the index should be based on objective analysis and communicated to the market in a full and timely fashion
  - Indices setting themselves up to be broadly traded need to be supertransparent in an opensource and public way

Principle 6: Clear Governance

- **Clear Governance**
  - Ownership of the index should be distinguished from its oversight and production
  - Oversight of index should involve an appropriately staffed committee, the **'Index Oversight Committee'** (IOC).
  - The IOC should have broad representation, ideally including external experts, and a mandate to maintain an index that encourages trading and liquidity
  - Production of the index should be conducted by an independent **'Index Calculation Agent'**

The framework covers all the elements of developing and operating a longevity index

- **Framework addresses:**
  - Underlying population
  - Input data
    - Source, frequency, timing lag, reliability
  - Index methodology
  - Index metrics (output data)
    - Mortality rates, life expectancies, survival rates
    - Including granularity of breakdowns
  - Calculations
  - Late or missing data
  - Discretion
  - Restatement
  - Production process

What is the LLMA?

- The **Life and Longevity Markets Association:**
  - Aims to maintain momentum in promoting standardisation, providing education and engaging with market participants across the spectrum
- **Seeking feedback from market participants on the Longevity Index Framework**
  - Details available at www.llma.org
  - Closing date for feedback 4 October