Longevity Risk and Reinsurance

Strategies for Managing Annuity Blocks

Presented by:

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TODAY’S GENERATION IS LIVING 7 YEARS LONGER THAN THE PREVIOUS ONE.
Let’s Prepare for a Longer Retirement
What Are the Key Areas of Risk?

1. Investment Risk
   Risk that asset performance falls short of expectations

2. Longevity Risk
   Risk that annuitants and beneficiaries live longer than expected

3. Inter-generational Risk
   Risk that we pay the benefits of today’s elderly at the expense of securing the benefits of younger annuitants

Failure to manage these risks is behind today’s growing funding gap for pension funds, and creates challenges for annuity providers.
The Sustainability Model will help annuity providers regain and maintain a path toward a stable and sustainable future.

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Failure to manage these risks is behind today’s growing funding gap for pension funds, and creates challenges for annuity providers.

- **Management**
  - Asset/liability matching
  - Long duration fixed income (liquid and illiquid)
  - Inflation linked assets
  - Diversified insurers can balance mortality and longevity risk exposures
  - Specialty annuity writers can reinsure longevity risk
  - Protect annuitants through prudent investment and longevity risk management
Annuity providers are surrounded by risk.
Life Expectancy at Birth Has Increased More Rapidly in Chile since 1970

Source: OECD Health Statistics 2013
Life Expectancy at Birth Has Increased More Rapidly in Chile since 1970

United Kingdom
- 1970: 71.9
- 2011: 81.1

United States
- 1970: 70.9
- 2011: 78.7

Chile
- 1970: 62.1
- 2011: 78.3

Source: OECD Health Statistics 2013
The Retired Lifetime of U.S., U.K. and Chilean Males Has Increased Significantly

Period Life Expectancy from age 65

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Period Life Expectancy from age 65

Longevity Risk Needs to Become Part of the Risk Management Framework Because it is Material

For every year that life expectancy extends, the liability will likely increase by 3% or more

A 95\textsuperscript{th} percentile outcome might increase the liability by 6.5\% or more from current annuitant mortality tables

Source: Prudential.
Assumes a group of retired annuitants, 72\% male and 28\% female with average age 74. Benefits are assumed to increase at 3\% per annum.
Longevity and Inflation Risk Combine to Magnify Concerns

A 95th percentile outcome might increase the liability by 25% or more if both longevity and inflation are stressed.

Source: Prudential.
Assumes a group of retired annuitants, 72% male and 28% female with average age 74. Benefits include indexed cost of living adjustments which will vary with economic conditions.
Risk decisions made without longevity risk in the picture will consistently undervalue the benefits of risk management.
Inflation Linked and Deferred Liabilities are the Most Risky for an Annuity Writer

Source: Pacific Global Advisors
Inflation Linked and Deferred Liabilities are the Most Risky for an Annuity Writer

Deterministic Stress on Liabilities
(Impact of a 1% Decline in Rates and a 1% Increase in Mortality Improvements)

Source: Pacific Global Advisors
Inflation Linked and Deferred Liabilities are the Most Risky for an Annuity Writer

Deterministic Stress on Liabilities
(Impact of a 1% Decline in Rates and a 1% Increase in Mortality Improvements)

Source: Pacific Global Advisors
Interest rate risk, longevity risk, and inflation risk compound each other in the pension liability

therefore

leaving longevity risk out of the analysis will underestimate total risk

especially in regard to

inflation linked liabilities and deferred liabilities, because their longer durations make them significantly more sensitive to adverse outcomes
When Should an Insurer Use Longevity Reinsurance?

Diversified Life Company

- Balance Mortality and Longevity
- Control Leverage
- Capital Efficiency and Security
- Earn Risk and Liquidity Premia
- Match Assets and Liabilities
When Should an Insurer Use Longevity Reinsurance?

Diversified Life Company

Specialty Annuity Company

- Capital Efficiency and Security
- Control Leverage
- Earn Risk and Liquidity Premia
- Match Assets and Liabilities
- Manage Mortality and Longevity
- Balance Mortality and Longevity

For financial professional or institutional plan sponsor use only.
When Should an Insurer Use Longevity Reinsurance?

Diversified Life Company
- Balance Mortality and Longevity
- Control Leverage
- Capital Efficiency and Security
- Earn Risk and Liquidity Premia
- Match Assets and Liabilities

Specialty Annuity Company
- Control Leverage
- Reinsure Longevity Risk
- Capital Efficiency and Security
- Earn Risk and Liquidity Premia
- Match Assets and Liabilities
Longevity Reinsurance is Used By U.K. Annuity Writers to Manage Longevity Risk

Source: Prudential
Longevity Reinsurance is Used By U.K. Annuity Writers to Manage Longevity Risk

Converts unknown future liability into fixed liability cash flow

Used by U.K. pension plans and U.K. annuity writers

Net payments from Prudential
(Floating Benefits > Fixed Premiums + Fees)

Net payments to Prudential
(Floating Benefits < Fixed Premiums + Fees)

Source: Prudential
Longevity Reinsurance is Used By U.K. Annuity Writers to Manage Longevity Risk

With Longevity Reinsurance in place, an annuity writer can invest in fixed income securities to match the green line—its known future liability.

- **Net payments from Prudential**
  - (Floating Benefits > Fixed Premiums + Fees)

- **Net payments to Prudential**
  - (Floating Benefits < Fixed Premiums + Fees)

Source: Prudential
The Asset Strategy Can Combine Liquid and Illiquid Fixed Income Selected for Duration, Yield, or Inflation Protection

<table>
<thead>
<tr>
<th>Liquidity</th>
<th>Duration</th>
<th>Yield</th>
<th>Inflation Protected</th>
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<tbody>
<tr>
<td>U.K. Government Bonds</td>
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<tr>
<td>U.K. Inflation Linked Government Bonds</td>
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<td>National Rail Bonds</td>
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<td>Covered Bonds</td>
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<td>Corporate Bonds</td>
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<td>CLOs</td>
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<td>University Housing and Social Housing</td>
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<td>Commercial Mortgages</td>
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<td>Private Placement Loans</td>
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<td>Infrastructure Loans</td>
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<tr>
<td>Inflation Linked Ground Leases</td>
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</tbody>
</table>

Overall yield of the portfolio is roughly 4%

Duration is matched to the liability as closely as possible and swaps may be used to improve the match.
The Asset and Liability Strategies Taken Together Are Stress Tested to Determine Capital Requirements

The average rating of the portfolio is AA-.

Source: Prudential. For illustrative purposes only.
The Asset and Liability Strategies Taken Together Are Stress Tested to Determine Capital Requirements

The average rating of the portfolio is AA-

- 8% AA
- 2% A
- 2% BBB
- 11% NIG/NR
- 77% AAA

- Capital is adequate if an insurer can withstand:
  - a 20% drop in mortality rates; and
  - a repeat of the financial crisis

- This is a long-term stress at 99.5%

- To write new business, a company must hold 130% of the minimum capital requirement

Source: Prudential. For illustrative purposes only.
Let’s prepare for a longer retirement with **sustainable annuity providers**.

The retirement security of real people depends on it.
Q&A

Amy Kessler
Senior Vice President
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Longevity Reinsurance is Used By U.K. Annuity Writers to Manage Longevity Risk
Longevity Reinsurance is Fully Collateralized to Ensure Full Reinsurance Credit

Reinsurer's Collateral Account

Cedant's Collateral Account

In Default of Reinsurer

Reinsurer's Collateral

Cedant's Collateral

In Default of Cedant

Insurer or Bank (Cedant)

Reinsurer

Fixed Premiums + Fees

Floating Benefits

Benefits
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