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SEPTEMBER 20-21, 2012
SESSION/SÉANCE :
PD-9 (Life) Challenges in a Low-Interest-Rate Environment

SPEAKER(S)/CONFÉRENCIER(S) :

Moderator: Derek Wright*, partner, Deloitte & Touche LLP

Speakers:
Robert Bhatia*, assistant vice-president Life Products, Transamerica Life Canada
Garry MacNicholas (FCIA), senior vice-president and chief actuary, Great-West Life
Michel Giguère (FCIA), partner, Deloitte & Touche LLP
Insurers could lose millions if low interest rates persist

The economic and regulatory environment has prompted RBC Insurance to suspend the sale of several permanent individual life insurance products

Sun Life Financial Inc. reported second-quarter profit of $51-million, down from $408-million a year earlier, as lower stock markets and interest rates continue to chip away at the life insurance sector’s profitability

Manulife posts $300-million quarterly loss; Life insurer takes a $677-million hit to update its assumptions on what interest rates will do in the long term

Manulife lowers sights as sting of rock-bottom rates lingers

Insurance giants getting squeezed; Volatile markets, low interest rates lead to losses

Sun Life warns that low interest rates could cost it as much as $600M by 2015
Interest rates are very low
Canadian Government Bond Yields
Interest rates are very low

• What happens next?
  – Current yields are an “anachronism” and will revert to norm shortly
  – Current Yields are the new norm
  – I have no idea
Interest rates are very low

• What happens next?
  – Current yields are an “anachronism” and will revert to norm shortly
  – Current Yields are the new norm
  – I have no idea
Global Economic Outlook

The Summer Lull

- Eurozone: Back to back
- United States: Five reasons for worry
- United Kingdom: Back into recession
- Ireland: Losing its way

3rd Quarter 2012
DISCLAIMER

• the views expressed by the speakers are their own personal views and not necessarily those of their employers.
LIFE PRODUCT DEVELOPMENT IN THE LOW INTEREST RATE ENVIRONMENT

Robert Bhatia, FSA FCIA
AGENDA

- Background on Interest Rates
- Overview of the Canadian Marketplace
- Industry Response
- Life Products Going Forward
BACKGROUND ON INTEREST RATES
BOTH NOMINAL AND REAL LONG-TERM INTEREST RATES HAVE BEEN ON A SECULAR DOWNTREND

US and Canadian area 10y government bond yields (nominal and real)

Sources: Datastream, Swiss Re Economic Research & Consulting
CURRENT LOW NOMINAL RATES ARE NOT EXCEPTIONAL OVER A LONGER VIEW

Forecasting interest rates "difficult".
OVERVIEW OF THE CANADIAN MARKETPLACE
## INSURANCE PRODUCT LANDSCAPE

<table>
<thead>
<tr>
<th>Products</th>
<th>Term assurance</th>
<th>Whole life</th>
<th>Deferred fixed and variable annuities</th>
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<tbody>
<tr>
<td>Group life</td>
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<td>Universal life</td>
<td>Unit-linked savings</td>
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<tr>
<td>Disability</td>
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<td>Variable life</td>
<td>Guaranteed interest contracts</td>
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<td>Long-term care</td>
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<td>Endowment insurance</td>
<td>Defined contribution pension products</td>
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<td>Critical Illness</td>
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<td>Combined life-annuity</td>
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<td>Payout annuities</td>
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<td>CI with generous ROP</td>
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<td>Impaired annuities</td>
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<th>Main risks for insurer</th>
<th>Mortality</th>
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<th>Interest rate</th>
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<tbody>
<tr>
<td>Mortality</td>
<td>Morbidity</td>
<td>Longevity</td>
<td>Equity market</td>
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<td>Lapse</td>
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<td>Lapse</td>
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<td>Equity market</td>
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<th>Main sources of profits</th>
<th>Underwriting result</th>
<th>Investment result</th>
<th>Investment result</th>
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<td>Underwriting result</td>
<td>Investment result</td>
<td>Investment result</td>
<td>Fee income</td>
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<td>Fee income</td>
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PRODUCTS WITH SIGNIFICANT INTEREST RATE RISK

• Universal Life with Level Cost of Insurance
• Whole life products (non-par)
• Term to 100.
• Permanent Critical Illness
• Segregated funds with GMWB
NEW LIFE INSURANCE PRODUCTS ISSUED

- The total number of new life policies stayed flat over the period
- Term gained popularity following the 2008 financial crisis
- The number of new Whole Life policies is increasing

Source: LIMRA
NEW LIFE INSURANCE PRODUCTS ISSUED

Policy Share by Product - 2010

Term 55%
Whole Life 19%
UL-Limited Pay 8%
UL-Level 9%
UL-ART 9%

Policy Share by Product – 2012

Term 57%
Whole Life 21%
UL-Limited Pay 6%
UL-Level 8%
UL-ART 8%

YTD sales of Q2
Source: LIMRA
NEW LIFE INSURANCE PRODUCTS ISSUED

Large increase in premium sales of Whole Life products

More than 60% of life insurance sales are guaranteed permanent products.

YTD sales of Q2
Source: LIMRA
Independent tends to sell more UL while Career channels sell whole life plans. 3 of the top 4 companies have a career distribution channel.

Source: LIMRA
NEW LIFE INSURANCE PRODUCTS PROFITABILITY

Percentage of companies that are pricing profitability

<table>
<thead>
<tr>
<th>Product</th>
<th>2008</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Term 10</td>
<td>58%</td>
<td>47%</td>
</tr>
<tr>
<td>Term 20</td>
<td>67%</td>
<td>68%</td>
</tr>
<tr>
<td>UL Level COI</td>
<td>13%</td>
<td>6%</td>
</tr>
<tr>
<td>UL with YRT COI</td>
<td>70%</td>
<td>63%</td>
</tr>
<tr>
<td>CI – Term</td>
<td>38%</td>
<td>56%</td>
</tr>
<tr>
<td>CI – Limited Pay</td>
<td>40%</td>
<td>26%</td>
</tr>
<tr>
<td>CI - Permanent</td>
<td>31%</td>
<td>15%</td>
</tr>
</tbody>
</table>

*Source: Munich Re*
KEY CONSEQUENCES OF LOW INTEREST RATE ENVIRONMENT

• Significant liability strengthening on in force.
• Lower earnings and profitability on new business and in-force (particularly on a market consistent basis).
• Higher sensitivity to interest rates.
• Higher required capital.
• Concerned stakeholders (i.e. regulators, shareholders, consumers, advisors etc)
THE INDUSTRY RESPONSE
How has the Industry responded?

- Price increases
  - Increased fees for segregated funds with GMWB
  - Level COI rates have increased more than 50% since 2010.
  - Middle of the pack pricing

- Lowering Guarantees
  - Reduction in guarantees for fixed accounts on UL

- Lowering policyholder dividends
  - This will impact the sales of par whole life in the long term
How has the Industry responded?

- Limiting Sales
  - Capping face amount
  - De-emphasis of unprofitable products in their marketing
- Complete Withdrawal of products
- Alignment with distribution channels that sell more profitable products
How has the Industry responded?

• Presenting alternative solutions such as:
  ➢ Needs analysis that promotes layering LCOI with term insurance
  ➢ Modifying ART products to make product more attractive (reducing rates at later durations and increasing 1st year compensation)
LIFE PRODUCTS GOING FORWARD
Cansim - Government of Canada marketable bonds, average yield: over 10 years; hypothetical 7yr average smoothing.
Life Products Going Forward

- Simpler products
- Improvements to UL with increasing cost of insurance
  - Shift to ART might be challenging:
    - volatile market
    - Many advisors not comfortable with the product
    - Clients want guarantees (i.e. “pay it and forget it”)
- Opportunity for introduction of adjustable products
  - Canada is one of the few countries sell long term guaranteed products.
  - Discussions have been surfacing regarding adjustable products
  - With time Canadian market may become more open to these products
Life Products Going Forward

• Increase in development of sales tools
  ➢ Complete financial solutions
  ➢ Bundling products to meet clients’ needs
  ➢ Improved information access to policyholders and advisors

• Focus on improving the sales process
  ➢ Use of electronic applications
  ➢ Fast approvals
Life Products Going Forward

Take this opportunity to get closer to our clients, understand their financial needs, and to provide creative solutions that meet the needs of all stakeholders.
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Challenges in a Low-Interest-Rate Environment
PD-9 (Life)

SPEAKER(S)/CONFÉRENCIER(S):
Garry MacNicholas
Challenges in a Low-Interest-Rate Environment

Agenda

Landscape

Current Mindset

Valuation Considerations
It’s been a bull market for Canadian bonds for 30 years with yields now at very low levels, the lowest in the memory of boomers and subsequent generations ...
Challenges in a Low-Interest-Rate Environment

The Canadian stock market performed relatively well during much of the 80s, 90s and early 2000s. This made up for the decline in new money yields for life insurance companies with equity exposures. Perceptions of future stock market performance changed of course in 2008 ...
Challenges in a Low-Interest-Rate Environment

TSX 5-Year Rolling Average & 10-Year Governments

Landscape
Challenges in a Low-Interest-Rate Environment

Current Mindset

“Insurers are being hit from all sides: weaker sales of mutual funds, lower returns on assets, increased hedging costs from volatile equity markets and the growing possibility that they might have to tap debt or equity markets to raise funds”

- Mario Mendonca, Canaccord Genuity
Challenges in a Low-Interest-Rate Environment

Current Mindset

“Low interest rates are expected to provide a credit lifeline for Canadian consumers, but they're taking their toll on the country's life insurance companies”

- BNN
Challenges in a Low-Interest-Rate Environment

Current Mindset

“Life insurance used to be the quintessential safe and boring business in Canada. No more. It’s a terrible industry to be invested in right now.”

- Peter Routledge, National Bank Financial
Current Mindset

We took an informal poll of senior leaders in the industry

We asked for their perspective on the impact the current environment has had on:

- Insurance companies, clients, friends & family
Challenges in a Low-Interest-Rate Environment

Current Mindset

First the out takes:

“Low interest rates drive down monthly payments, increasing cost of housing and making it more and more difficult for youth to enter housing market (i.e. how will I ever get my kids to move out!).”

“Lower cost of mortgages means easier to financially afford a separation/divorce (there is upside to lower interest rates!).”

“A friend increased his mortgage to extract some of the inflated value of the house and used it to play the stock market (yikes!).”
Challenges in a Low-Interest-Rate Environment

Current Mindset

And now the rest of the results

Survey says...
Challenges in a Low-Interest-Rate Environment

Current Mindset

Key areas of impact today of the low interest rate environment for insurance companies:

- Guarantees
- Investment sourcing
- Pricing actions
- Product design
- Assumption setting
Challenges in a Low-Interest-Rate Environment

Current Mindset

Ranking from most to least significant impact on the future strategic direction of the industry:

- Higher cost of guarantees
- Reduced availability of high yielding assets
- Existing product offerings no longer meeting evolving customer needs
- Greater sensitivity to further drops in interest rates
- Focus on short term financial results by external audiences
Key areas of impact of the low interest rate environment for clients:

• Reduced ability to afford our products

• Dropping additional benefits like LTD to save money

• Clients and advisors exercising older contract options with higher guarantees

• Reluctance to invest due to lower returns
Valuation Challenges or Considerations

Model Risks

Behaviour Risks

Measurement of optionality

Standards & Guidance under stress and subject to criticism
Challenges in a Low-Interest-Rate Environment

Model Risks

Unintended consequences of creating simple modeling relationships or algorithms that worked well when interest rates were higher but now result in projected:

- Expense deflation
- Negative interest rates
- Too much equity leverage (equity to fixed income ratio well above investment policy level)
- Negative IIT costs

...and so on

Have you checked your models?
Challenges in a Low-Interest-Rate Environment

Behaviour Risk

Assumptions for option election or policy feature utilization quickly outdated:

• Assumptions set when there was little experience with advisor and policyholder behaviour in the stressful circumstances we’re experiencing

• Product design features thought to be benign in “normal” circumstances but proving not to be now
Measurement of optionality

• Is it possible to assign a reasonable value estimate to an option using a deterministic application across a wide range of current circumstances?

• Requires stochastic modeling but this is seen to be challenging when the current state is perceived to be an extreme state.
Challenges in a Low-Interest-Rate Environment

Valuation Standards & Guidance

• Prescribed scenario #9
• Prescribed scenario #1 (URR)
• Stochastic applications: calibrations, guidance, prescription?
• Additional deterministic scenarios
Challenges in a Low-Interest-Rate Environment

Prescribed Scenario #9

• At the time it was added to the Standards, it seemed sensible to prescribe this scenario
• This sentiment has changed now that this is often the defining scenario
• CLIFR developing a change recommendation
Challenges in a Low-Interest-Rate Environment

Prescribed Scenario #1

- URR and future URR change implications seem to be part of the lexicon of analysts following our industry. [B+ for educating the analysts.]
- But is this lagging measure really giving us meaningful and appropriate information to set our C3 provisions?
- CLIFR reviewing
Challenges in a Low-Interest-Rate Environment

Stochastic Applications

Deterministic point estimates are old school. Distributions, well developed and appropriately developed, are where we want to be. We’re getting there (slowly).

The challenges are:

• Calibrating and maintaining models;
• Operational and control requirements;
• Complexity vs. current state inertia;
• Variability of results
Additional Deterministic Scenarios

• Good idea and an important aspect of our standards but which ones to test?
• Too little guidance and too much judgment?
• Widen or narrow the range of practice?
Impact of low interest rates on capital

- Low interest rates decrease IRR and URR which increase reserves, thereby:
  - Reducing capital available
  - Increasing capital requirements calculated in % of reserves, such as C-3 requirements
  - Increasing lapse requirements which vary in function of reserves
- Further, it has been observed that the more interest rates decline, the more the lapse requirements increase
Impact of low interest rates on capital

- Low interest rates increase disabled lives reserves, thereby:
  - Increasing morbidity risk components

- Low interest rates increase payout annuity reserves, thereby:
  - Increasing mortality requirements

- Low interest rates decrease slightly net amount at risk, thereby:
  - Decreasing so slightly mortality requirements on insurance
Impact of low interest rates on capital

- Scenario 1 provides some kind of smoothing of the URR because of the average of historical rates used
- Scenario 9 has an immediate impact on URR (URR = IRR)
- The more the insurance companies will be impacted by scenario 9 rather than scenario 1, the more sensitive the companies will be to the impacts described previously
Low interest rates increase real estate values, thereby:

- For real estate matched with the insurance segments:
  - Increasing capital required for C-1 risk; and
  - Staying neutral on available capital

- For real estate in the surplus segment:
  - Increasing capital required for C-1 risk; and
  - Increasing capital available
  - The net effect depending on the relative figures
- Low interest rates increase bond values, thereby:
  - For bonds matched with the insurance segments:
    - Increasing capital required for C-1 risk; and
    - Staying neutral on available capital
  - For bonds in the surplus segment designated as « Available for Sale »:
    - Increasing capital required for C-1 risk; and
    - Staying neutral on available capital (going through OCI)
      - Unless bonds are traded
  - For bonds in the surplus segment designated as « Held for Trading »:
    - Increasing capital required for C-1 risk; and
    - Increasing available capital
- On segregated funds guarantees:
  - Capital required will increase since CTE(95) liability will increase faster than, say CTE(80) liability
  - Capital available will not change if interest rate risk hedged properly
  - Capital available will decrease if interest risk not hedged
  - So, capital requirements do not recognize the benefit of hedging
Impact of low interest rates on capital

- In summary, low interest rates deteriorate capital ratios, in general
Most obvious answer is to raise additional capital

- Tylenol effect: does not solve, but reduces pain

Improve asset liability matching, so that company is less sensible. For instance:

- Better matching reduces the impact of reinvestment
- Lengthen assets so the impact of URR is slower
- Use inter-segment notes to optimize the global picture
Challenges in a Low-Interest-Rate Environment

Questions?