Interest Rate Hedging: Market Trends and Best Practices

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SOCIETY OF ACTUARIES
Antitrust Compliance Guidelines

Active participation in the Society of Actuaries is an important aspect of membership. While the positive contributions of professional societies and associations are well-recognized and encouraged, association activities are vulnerable to close antitrust scrutiny. By their very nature, associations bring together industry competitors and other market participants.

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• Do not discuss prices for services or products or anything else that might affect prices
• Do not discuss what you or other entities plan to do in a particular geographic or product markets or with particular customers.
• Do not speak on behalf of the SOA or any of its committees unless specifically authorized to do so.
• Do leave a meeting where any anticompetitive pricing or market allocation discussion occurs.
• Do alert SOA staff and/or legal counsel to any concerning discussions
• Do consult with legal counsel before raising any matter or making a statement that may involve competitively sensitive information.

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Poling Question

What is your level of familiarity with interest rate risk and hedging?

A. I’m regularly involved in risk management and hedging
B. I’m occasionally involved in risk management and hedging
C. I’m rarely involved in risk management and hedging
D. Risk management and hedging is new to me
Overview of Global Atlantic
Leading U.S. insurance company focused on attractive retirement and life insurance markets

- Founded at Goldman Sachs (“GS”) in 2004 and separated as an independent company in 2013
- ~1,100 employees and a seasoned management team with an average of ~20 years of experience

### Performance Highlights

<table>
<thead>
<tr>
<th>Scaled &amp; Diversified Business</th>
<th>Leader in Target Markets</th>
<th>Disciplined Growth</th>
<th>Mid-teens Returns</th>
<th>Investment Expertise</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>$90bn</strong> Total GAAP Assets¹</td>
<td><strong>Top 5</strong> Fixed Annuities²</td>
<td><strong>17%</strong> Operating Earnings CAGR</td>
<td><strong>~16% 4yr Avg. Operating ROE (ex. AOCI)</strong></td>
<td><strong>~30bps Yield Outperformance vs. Peer Average³</strong></td>
</tr>
<tr>
<td><strong>Top 5</strong> Block Reinsurer²</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. As of December 31, 2019
2. Based on FY2019 sales data as reported to LIMRA. Block Reinsurer based on statutory reserve credit taken by U.S. retirement and life insurance cedants for reinsurance transactions entered into from January 1, 2018 to December 31, 2019.
3. Compared to a publicly traded peer set determined by management for the four years and nine months ending September 30, 2019.

Note: All averages and CAGRs are FY 2016 – FY 2019 results.

Note: Past performance is not a guarantee of future results. The presentation above includes non-GAAP measures should not be considered as an alternative to GAAP financial measures. The Company’s non-GAAP measures may not be calculated or comparable to similarly titled measures used by other companies. Management uses non-GAAP financial measures and has presented them in this presentation because it believes such measures allow investors to better understand the Company’s results of operations and the underlying profitability drivers of the Company’s business.
Chatham Financial delivers financial risk management advisory and technology solutions to organizations across industries and around the world — helping companies maximize value in the capital markets.

- **$2.4 trillion** in hedged notional on our platform
- **3,000+ clients** around the world
- **Over $700 billion** in transaction volume annually
- **3,000+ ISDAs** reviewed annually
- **Seven global offices**
- **700 employees**
Why are we here today?

Context for insurance risk from a balance sheet perspective
Some telling charts...
Aaa Corporate Bonds – 2000 to Present
Aaa Corporate Bonds – 1980 to Present
10-Year treasury—1980 to Present
Historic trends in insurance industry net yield
From 2010 to 2018 net yield on invested assets has steadily fallen across the life insurance industry

The post-financial crisis era has introduced historically low interest rates in the United States, which has put significant pressure on the net yield of insurers, as the return from fixed income products decrease proportionally with low rates.

This in turn has pushed insurers to seek yield in foreign assets as well as across non-traditional asset classes such as private equity and direct investments in real assets. The higher risk and lower liquidity of these assets command a higher risk premium to compensate investors accordingly.

Source: NAIC Capital Markets Special Report
## 10-year change in net yield

<table>
<thead>
<tr>
<th>Insurer</th>
<th>2008 Net Yield</th>
<th>2018 Net Yield</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Venerable Insurance &amp; Annuity Co</td>
<td>3.77%</td>
<td>4.98%</td>
<td>1.21%</td>
</tr>
<tr>
<td>Global Atlantic</td>
<td>4.63%</td>
<td>4.41%</td>
<td>-0.22%</td>
</tr>
<tr>
<td>Brighthouse Financial</td>
<td>4.66%</td>
<td>4.31%</td>
<td>-0.35%</td>
</tr>
<tr>
<td>John Hancock</td>
<td>5.67%</td>
<td>5.02%</td>
<td>-0.65%</td>
</tr>
<tr>
<td>Genworth</td>
<td>5.39%</td>
<td>4.68%</td>
<td>-0.71%</td>
</tr>
<tr>
<td>Wilton Re</td>
<td>5.98%</td>
<td>5.19%</td>
<td>-0.79%</td>
</tr>
<tr>
<td>Pan American Life</td>
<td>5.88%</td>
<td>4.99%</td>
<td>-0.89%</td>
</tr>
<tr>
<td>Protective</td>
<td>5.77%</td>
<td>4.73%</td>
<td>-1.04%</td>
</tr>
<tr>
<td>SCOR</td>
<td>3.81%</td>
<td>2.64%</td>
<td>-1.17%</td>
</tr>
<tr>
<td>Prudential Financial Inc.</td>
<td>5.04%</td>
<td>3.75%</td>
<td>-1.29%</td>
</tr>
<tr>
<td>RGA</td>
<td>5.72%</td>
<td>4.26%</td>
<td>-1.46%</td>
</tr>
<tr>
<td>Northwestern Mutual</td>
<td>5.78%</td>
<td>4.19%</td>
<td>-1.59%</td>
</tr>
<tr>
<td>Standard Life &amp; Cas Ins Co.</td>
<td>5.71%</td>
<td>4.12%</td>
<td>-1.59%</td>
</tr>
<tr>
<td>Lincoln Financial Group</td>
<td>5.72%</td>
<td>4.01%</td>
<td>-1.71%</td>
</tr>
<tr>
<td>Standard</td>
<td>5.77%</td>
<td>3.53%</td>
<td>-2.24%</td>
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How does this impact strategy...
Life Insurance Industry Market Perspectives

CIOs are adding new investment vehicles to improve yields. The ability to rapidly deploy hedging strategies gives insurers a competitive advantage.

**Driving Objectives**

**Increase Yield**
Insurers are looking to increase yield in this extended period of low interest rates. CIOs are expanding the types of investment vehicles to do so. Some of these new investments require hedging. Having the ability to hedge when necessary expands options available to CIOs to increase yield.

**Improve Reaction Time to Market Opportunities**
New hedging strategies can be difficult to implement for derivative operations teams – causing CIOs to miss attractive opportunities. Further, as insurers grow via acquisition, derivative volumes can spike. Many derivative operations teams lack the necessary expertise and systems to add new strategies or deal with spikes in volumes in a short period of time.

**Secondary Considerations**

**Focus on Core**
What opportunities exist to outsource non-core functions

**Flexible Technology**
Leveraging efficiencies of technology that evolves with market changes

**Reduce Costs**
Seek out opportunities for cost savings to boost margins and preserve capital
Match the products/exposure with the hedging instrument

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<th>Derivative Instrument</th>
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<td>Forward Starting Swaps</td>
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Trends in insurer invested asset mix
While bonds continue to be the majority of holdings, the subtle decline in bonds has been filled by an uptick in structured products.

Source: NAIC Capital Markets Special Report

“Equities” includes common stock and preferred stock. “Other” includes real estate, cash and short-term investments, securities lending, and Schedule BA assets (long term assets including but not limited to hedge funds and private equity)
Trends in top insurers CLO investments
There’s been a sharp recent up-tick in CLO activity

Source: S&P Global Market Intelligence
Derivative usage in the insurance industry

As measured by notional, the use of derivatives among insurers has grown over time. Life insurers account for the majority of reported notional.

Insurance Industry Derivative Usage ($ tn)

Source: NAIC Capital Markets Special Report
Poling Question

As far as you know, what hedging strategies are employed at your companies? (Select all that apply)

A. Hedging variable rate structured products
B. Hedging foreign bonds
C. Hedging forward bond purchases
D. Other
E. I’m not familiar with our current hedging programs
Case Study: Basis Risk
Client calculated material change in capital from decline in bootstrapped forward rates

Treasury Par Yield Curve

- 3/31/2018
- 6/30/2018
Case Study: Basis Risk
Client calculated material change in capital from decline in bootstrapped forward rates
Case Study: Basis Risk
Client calculated material change in capital from decline in bootstrapped forward rates
Case Study: Model Risk

Client calculated material change in capital from decline in bootstrapped forward rates

Treasury Par Yield Curve
3/31/2018 to 6/30/2018

10Y Treasury Forward Curve (Client Model)
3/31/2018 to 6/30/2018

10Y Treasury Forward Curve (NSS Model)
3/31/2018 to 6/30/2018
Case Study: Liquidity Risk

“Hence, as Harvard’s NPV on its IR swap contracts became more and more negative, the amount of cash it had to deliver as collateral rose. This created an additional consideration for Harvard; that of liquidity, or more accurately illiquidity. This increased need to generate more and more liquid cash likely played a roll in Harvard’s decision to pay $497.6 million in fiscal year 2009 to terminate a subset of its interest rate swaps with notional value totaling $1.1 billion, three of which swaps were tied to $431.7 million of bonds the university sold in fiscal years 2005 and 2007.”

- Society of Actuaries Committee on Finance Research, “Interest Rate Swaps – An Exposure Analysis”

Variation Margin (Smm)*

<table>
<thead>
<tr>
<th>Shock Rate</th>
<th>Current</th>
<th>1 year</th>
<th>2 year</th>
</tr>
</thead>
<tbody>
<tr>
<td>-200.00 bps</td>
<td>75,970,813</td>
<td>79,912,110</td>
<td>83,731,423</td>
</tr>
<tr>
<td>-150.00 bps</td>
<td>49,383,705</td>
<td>52,828,108</td>
<td>56,010,971</td>
</tr>
<tr>
<td>-100.00 bps</td>
<td>28,423,856</td>
<td>31,123,689</td>
<td>33,435,910</td>
</tr>
<tr>
<td>Unchanged</td>
<td>0</td>
<td>755,576</td>
<td>890,772</td>
</tr>
<tr>
<td>+100.00 bps</td>
<td>-14,898,859</td>
<td>-16,351,988</td>
<td>-18,653,491</td>
</tr>
<tr>
<td>+200.00 bps</td>
<td>-20,349,717</td>
<td>-24,005,967</td>
<td>-28,746,135</td>
</tr>
<tr>
<td>+300.00 bps</td>
<td>-19,313,883</td>
<td>-25,010,054</td>
<td>-32,036,366</td>
</tr>
<tr>
<td>+400.00 bps</td>
<td>-13,934,880</td>
<td>-21,424,058</td>
<td>-30,498,463</td>
</tr>
<tr>
<td>+500.00 bps</td>
<td>-5,756,946</td>
<td>-14,756,132</td>
<td>-25,600,374</td>
</tr>
</tbody>
</table>

*Variation Margin (VM) reflects the value of the position(s) and Bank can be a pledger or holder of collateral
Case Study: Future Bond Purchases—Bond Forward Solution

- An agreement to purchase bonds in the future at a price determined today
- Enables companies to “lock in” today’s rate for future investments
- Accounting considerations to align economic objectives with financial reporting outcomes

Hedge Execution

A price is agreed upon to purchase a bond in the future.

Bond Purchase Date

The bond is acquired at the previously agreed upon price.

Bond Maturity

The company retains the bond until maturity when principal is returned.
Case Study: Foreign Bond Hedging – Turnkey Solution

A large asset manager wanted to offer a new investment strategy to insurance companies giving them greater access to foreign investments. The company needed a comprehensive turnkey solution to hedge the FX exposure.

**Company goals**

- End-to-end outsourced solution for cross currency swaps that includes trade execution, collateral, ongoing operations, and accounting
- Tailored solution to fit the needs of multiple clients

**Key activities**

- Received bond investment trade details and executed cross currency swaps to hedge bonds
- Provided confirmation and transaction details to asset manager and insurance company through our technology platform – ChathamDirect
- Provided valuations and hedge accounting journal entries to client at the end of each month

**Results**

- Outsourced the entire derivatives process
- Fit seamlessly into the process between the asset manager and the client
Questions?
Thank you